

AECOM 1350 Deming Way Middleton, WI 53562 aecom.com

Project name: NCDOT INFRA Project

Project ref:

To: Carey Barr

From: Jeff Sandberg

CC: Patricia Macchi Date: March 1, 2019

Memorandum

Subject: NCDOT INFRA Safety Analysis

AECOM is preparing an INFRA grant application for improvements to a number of highway segments and locations on I-87 and I-95 in North Carolina. The application includes an analysis of the economic benefit of crash reduction for these improvements. The purpose of this memo is to document the methodology and results of the crash analysis.

Background

The projects in the INFRA grant application include a variety of improvement types. A summary of these improvements is in table 1 below:

		Table 1, Projec	ct Summary
Project Number	Highway	Location	Description
I-6007	I-87	SR2233 Interchange	Convert Diamond Interchange to Diverging Diamond Interchange
I-6005	I-87	Bus US 64 to US 264	Widen from four lanes to six lanes
H141265a	I-87	US 264 to NC 58	Widen inside shoulder to 4' and outside shoulder to 10'
U-6149	I-87	NC 58 to Thomas Road Overpass	Widen inside shoulder to 4' and outside shoulder to 10'
H141265b	I-87	Thomas Road Overpass to Martin County Line	Widen inside shoulder to 4' and outside shoulder to 10'
R-5869A	US 17	SR 1336/1338 Intersection	Convert At-Grade Intersection to Interchange
R-5869B	US 17	SR 1300 Intersection	Convert At-Grade Intersection to Interchange
H129200-BA	I-95	I-74 to SR1528	Widen from four lanes to eight lanes
I-5879	I-95	SR 1528 Interchange	Convert Diamond Interchange to Roundabout Interchange.
H129200-BB	I-95	SR1528 to US 301	Widen from four lanes to eight lanes
I-5987	I-95	US 301 to Bus US 301	Widen from four lanes to eight lanes

Methodology

When completing a crash analysis that's used for the determination of the economic benefit of safety improvements, the preferred method is to complete a predictive safety evaluation in accordance with the procedures in the FHWA Highway

Safety Manual (HSM). A predictive safety evaluation provides the expected safety performance of a facility based on crash history, long-term trends, and experience at similar facilities.

The three primary data sources needed to complete a predictive safety evaluation include:

- 1. Traffic Volumes Forecasted AADT for each project was calculated using AADT from the NCDOT AADT Web Map and annual average growth rates from the Travel Demand Model. Forecasted 2035 AADT was used for the analysis as the analysis year for the 2025 2045 study period.
- Crash Data Given the effort to gather crash data for these projects, the effort to code crash statistics into the
 safety models, and the short timeframe to complete this analysis, crash data was not used in the analysis. This
 means the results are based solely on crash experience at similar sites throughout the country and not "normalized"
 for site crash history.
- 3. Roadway Geometry Roadway geometry was determined using measurement tools in Google Earth.

A predictive safety analysis was completed for these projects using FHWA's Enhanced Interchange Safety Analysis Tool (ISATe) for freeway segments and interchanges, and the Interactive Highway Safety Design Model (IHSDM) for non-freeway segments and intersections. The analysis method includes predictive safety analysis of the existing conditions and proposed conditions. The expected safety benefit of the project was calculated as the difference between the existing conditions and proposed conditions.

ISATe and IHSDM have the ability to account for a variety of highway improvements, but many potential improvements cannot be evaluated within these programs. When planned improvements cannot be evaluated within the program, the appropriate analysis method is to complete the proposed conditions analysis in ISATe or IHSDM, then multiply the resulting predicted crash frequency by a crash modification factor (CMF) for additional improvements.

The HSM cautions against using more than two CMFs for a single analysis and using multiple CMFs that have overlapping benefit. Because of this, the analysis included no more than two CMFs and potential CMFs were qualitatively examined to assure they were reasonably independent of each other.

A summary of the method used for each project is in Table 2 below. All CMF ID references can be found on the website www.cmfclearghouse.org.

		Table 2, Pre	dictive Safety A	Analysis Methodology Summary
Project	Software	Crash Reduction	n Calc Method	
Number	Used	With Software?	With CMF?	CMF Details
I-6007	ISATe	No	Yes	ID 8258, "Convert Diamond Interchange to DDI" (CMF=0.67 for all crash types and severities)
I-6005	ISATe	Yes	No	N/A
H141265a	ISATe	Yes	No	N/A
U-6149	ISATe	Yes	No	N/A
H141265b	ISATe	Yes	No	N/A
R-5869A	IHSDM	No	Yes	ID 459, "Convert At-Grade Intersection into grade-separated interchange" (CMF = 0.58 for all crash types and severities)
R-5869B	IHSDM	No	Yes	ID 459, "Convert At-Grade Intersection into grade-separated interchange" (CMF = 0.58 for all crash types and severities)
H129200-BA	ISATe	Yes	No	N/A
I-5879	ISATe	No	Yes	ID 9448, "Convert to Roundabout Interchange" (CMF = 0.756 for all crash types and severities)
H129200-BB	ISATe	Yes	No	N/A
I-5987	ISATe	Yes	No	N/A

Evaluation Results

The estimated crash reduction results for each project is in Table 3 below. Detailed ISATe and IHSDM reports are attached.

	Table 3, Crash Red	duction Sເ	ımmary (cr	ashes per ye	ear)		
				Crash S	everity		
		K	А	В	С	PDO	TOT
Project I-6007							
	Existing Conditions	0	0.1	0.9	3.9	9	13.9
	Crash Reduction (CMF)	0	0	0.3	1.3	3	4.6
Project I-6005							
	Existing Conditions	1.6	4.4	23.4	56.7	185.3	271.4
	With Improvements	1.6	4.2	22.8	36.5	136.5	201.6
	Crash Reduction	0	0.2	0.6	20.2	48.8	69.8
Project H141265a							
	Existing Conditions	1.5	3.8	19.8	30.5	90.2	145.8
	With Improvements	1.2	3.1	16.2	25	81.2	126.7
	Crash Reduction	0.3	0.7	3.6	5.5	9	19.1
Project U-6149	·						
	Existing Conditions	2.2	5.7	29.5	45.6	160.8	243.8
	With Improvements	1.9	5	26	40.1	147.5	220.5
	Crash Reduction	0.3	0.7	3.5	5.5	13.3	23.3
Project H141265b	·						
	Existing Conditions	0.7	1.8	9.4	14.7	43.5	70.1
	With Improvements	0.6	1.5	7.9	12.3	40.5	62.8
	Crash Reduction	0.1	0.3	1.5	2.4	3	7.3
Project R-5869A	·						
	Existing Conditions		1	.34		2.97	4.31
	Crash Reduction (CMF)		0	.59		1.31	1.90
Project R-5869B	·						<u> </u>
	Existing Conditions		1	.46		3.07	4.53
	Crash Reduction (CMF)		0	.64		1.35	1.99
Project H1292-BA	·						
	Existing Conditions	1	2.8	14.7	39	143	200.5
	With Improvements	1.1	2.9	15.2	24.1	90.1	133.4
	Crash Reduction	-0.1	-0.1	-0.5	14.9	52.9	67.1
Project I-5879							
	Existing Conditions	0	0	0.1	0.6	2.5	3.2
	Crash Reduction (CMF)	0	0	0.02	0.15	0.61	0.78
Project H1292-BB							
	Existing Conditions	1.1	2.9	15	39.2	147.8	206
	With Improvements	1.1	2.8	14.8	22.9	87.3	128.9
	Crash Reduction	0	0.1	0.2	16.3	60.5	77.1

Project I-5987						
Existing Conditions	3.8	9.6	40.9	78.8	350.5	483.6
With Improvements	4	9.6	41.2	52.9	235.8	343.5
Crash Reduction	-0.2	0	-0.3	25.9	114.7	140.1

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			Out	put Summ	ary				
General Information									
Project description:		007 (Conve	ert I-87 & SR		change to I				
Analyst:	JJS		Date:	3/1/2019		Area type:		Urban	
First year of analysis:	2035								
Last year of analysis:	2035								
Crash Data Descript						T=			
Freeway segments	Segment c				No		of crash data		
			ata available	?	No		f crash data		
Ramp segments	Segment c				No		f crash data		
			ata available	?	No		f crash data		
Ramp terminals	Segment c				No		f crash data		
		el crash da	ata available	?	No	Last year o	f crash data	:	
Estimated Crash Sta			,						
Crashes for Entire F				Total	K	Α	В	С	PDO
Estimated number of crash				13.9	0.0		0.9	3.9	9.0
Estimated average crash fr				13.9	0.0		0.9	3.9	9.0
Crashes by Facility	Componen	t	Nbr. Sites	Total	K	Α	В	С	PDO
Freeway segments, c			0	0.0	0.0		0.0	0.0	0.0
Ramp segments, cras		-	0	0.0	0.0		0.0	0.0	0.0
Crossroad ramp term			2	13.9	0.0		0.9	3.9	9.0
Crashes for Entire F	acility by Y	'ear	Year	Total	K	Α	В	С	PDO
Estimated number of	crashes dur	ing	2035	13.9	0.0	0.1	0.9	3.9	9.0
the Study Period, cras	shes:		2036						
			2037						
			2038						
			2039						
			2040						
			2041						
			2042						
			2043						
			2044						
			2045						
			2046						
			2047						
			2048						
			2049						
			2050						
			2051						
			2052						
			2053						
			2054						
			2055		·				,
			2056		·				
			2057		-				
			2058						
Distribution of Crasi	hes for Ent	ire Facility	′						
Crash Type	Crasi	n Type Ca	tegory				es During 1		
,,		,,	J.,	Total	K	Α	В	С	PDO
Multiple vehicle	Head-on c			0.1	0.0		0.0	0.0	0.1
	Right-angle			3.3	0.0		0.2	1.0	2.0
	Rear-end o			8.0	0.0		0.5	2.4	4.9
	Sideswipe			1.5	0.0		0.0	0.2	1.3
	Other mult			0.2	0.0		0.0	0.0	0.2
			le crashes:	13.1	0.0		0.8	3.7	8.4
Single vehicle	Crashes w		-	0.0	0.0		0.0	0.0	0.0
	Crashes w			0.6	0.0		0.0	0.1	0.4
	Crashes w			0.0	0.0		0.0	0.0	0.0
	Crashes w			0.0	0.0		0.0	0.0	0.0
	Other singl	e-vehicle of	crashes	0.2	0.0		0.0	0.1	0.1
		gle-vehicle Total cras		0.8 13.9	0.0		0.0	0.2 3.9	0.5 9.0

				Evalua	tion Site S	ummary				$\overline{}$
General In	formation				HOL. C.L.	ulli				
Project des			007 (Conve	ert I-87 & SF	2233 Inte	rchange to	DDI) - Exist	ing Conditio	ons	
Analyst:		JJS		Date:	3/1/2019		Area type:		Urban	
First year o	of analysis:		Total lengt	h of freewa			Period (mi):			
Last year o	of analysis:				·					
Site Descr										
Freeway S	egments									
Number	Lanes	Study Period	Study Peri	od Descript	ion					
	L	Length (mi)								
1	0		0							
2	0		0							
3	0		0							
4	0		0							
5	0		0							
6	0		0							
7	0		0							
8	0		0							1
9	0		0							1
10	0		0							
11	0		0							
12	0		0							
13	0		0							
14 15	0		0							1
16	0		0							ļ
17	0		0							ļ
17	0		0							
19	0		0							
20	0	0.000	0							
Ramp Seg			<u> </u>							\neg
	Study Peri	od			Number	Study Peri	od			
	Description				l	Description	n			
	0				21	0				
	0				22	0				
	0				23	0				
	0				24	0				
	0				25	0				
	0				26	0				
	0 0				27 28	0				
	0				29	0				
	0				30	0				
	0				31	0				
	0				32	0				
	0				33	0				
	0				34	0				
	0				35	0				
	0				36	0				
	0				37	0				
	0				38	0				
19	0				39	0				
	0				40	0				
	d Ramp Tei									
Number	Config.	Control	Study Peri	iod Descript	ion					
1	D4	Signal	EB Ramps							
2	D4	Signal	WB Ramps							
3	0	0	0							
4	0		0							
5	0	0	0							

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			Out	put Summ	ary				
General Information									
Project description:		05 (I-87 W	/idening) - E		ditions				
Analyst:	JJS		Date:	3/1/2019		Area type:		Urban	
First year of analysis:									
Last year of analysis:									
Crash Data Descrip									
Freeway segments	Segment cr				No		of crash data		
			ta available'	?	No		f crash data		
Ramp segments	Segment cr				No		f crash data		
			ta available'	?	No		f crash data		
Ramp terminals	Segment cr				No		f crash data		
		el crash da	ta available'	<i>!</i>	No	Last year o	f crash data	1:	
Estimated Crash St									
Crashes for Entire I				Total	K	Α	В	С	PDO
Estimated number of crash				271.4	1.6	4.4	23.4	56.7	185.3
Estimated average crash f		Period, cras		271.4	1.6	4.4	23.4	56.7	185.3
Crashes by Facility			Nbr. Sites	Total	K	Α	В	С	PDO
Freeway segments, o			8	271.4	1.6	4.4	23.4	56.7	185.3
Ramp segments, cra			0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp term			0	0.0	0.0	0.0	0.0	0.0	0.0
Crashes for Entire I			Year	Total	K	Α	В	С	PDO
Estimated number of		ng	2035	271.4	1.6	4.4	23.4	56.7	185.3
the Study Period, cra	shes:		2036						
			2037						
			2038						
			2039						
			2040						
			2041						
			2042						
			2043						
			2044						
			2045						
			2046						
			2047						
			2048						
			2050						
			2051						
			2052						
			2053						
			2054					1	
			2055						
			2056						
			2057						
			2058						
Distribution of Cras	hes for Entil	re Facility							
				Estima	ited Numb	er of Crash	es During	the Study I	
Crash Type	Crash	Type Cat	egory	Total	K	Α	В	С	PDO
Multiple vehicle	Head-on cra	ashes:		0.9	0.0	0.0	0.2	0.4	0.3
,	Right-angle			5.1	0.0	0.1	0.6	1.5	2.9
	Rear-end co	rashes:		164.8	1.0	2.8	14.7	35.7	110.7
	Sideswipe of	crashes:		55.8	0.2	0.7	3.5	8.6	42.8
	Other multip	ole-vehicle	crashes:	6.1	0.0	0.1	0.6	1.5	3.8
			e crashes:	232.7	1.4	3.7	19.6	47.5	160.5
Single vehicle	Crashes wit	th animal:		0.6	0.0	0.0	0.0	0.0	0.5
	Crashes wit	h fixed ob	ject:	27.8	0.2	0.5	2.8	6.6	17.7
	Crashes wit	th other ob	ject:	4.2	0.0	0.0	0.2	0.5	3.5
	Crashes wit	th parked	vehicle:	0.6	0.0	0.0	0.1	0.1	0.4
	Other single	e-vehicle c	rashes	5.5	0.1	0.2	0.8	1.9	2.6
	Total sing	le-vehicle Total crash	crashes:	38.7 271.4	0.3	0.7 4.4	3.8 23.4	9.1 56.7	24.8 185.3

				Evaluat	ion Site S	ımmarıı			
General In	formation			Evaluat	ion site s	ummary			
Project des		Project I.60	005 (I-87 W	idenina) - E	vieting Cor	ditione			
Analyst:	сприоп.	JJS	JOJ (1-07 VV		3/1/2019	iuitions	Area type:	Ti-	Jrban
First year o	f analysis	2035	Total lengt			for Study F	Period (mi):		Jibali
Last year o		2035	rotal lengt	ii oi iiccwa	y ocginiente	i ioi Olaay i	crioa (iiii).	0.000	
Site Descr		2000							
Freeway S									
Number	Lanes	Study Period	Study Peri	nd Descript	ion				
		Length (mi)	,						
1	4	1.190	1-W Lim to St	Crv					
2	4		2 - St Crv to L		е				
3	4	0.550	3 - Gore to G	ore					
4	4	0.730	Lizard Lick G	ore to End Crv					
5	4	1.060	End Crv to Er	id Crv					
6	4	0.720	End Crv to Ar	endell Gore					
7	4	0.590	Gore to Gore						
8	5	0.480	Arendell Gore	to E Limits					
9	0		0						
10	0		0						
11	0		0						
12	0		0						
13	0		0						
14	0		0						
15	0	0.000	0						
16	0		0						
17	0		0						
18 19	0	0.000	0						
20	0	0.000	0 0						
Ramp Seg		0.000	U				ı		
	Study Peri	od			Number	Study Peri	od		
	Description					Description			
1	0				21	0			
2	0				22	0			
	0				23	0			
	0				24	0			
	0				25	0			
	0				26	0			
	0				27	0			
	0				28	0			
	0				29 30	0			
	0				31	0 0			
	0				32	0			
	0				33	0			
	0				34	0			
	0				35	0			
	0				36	0			
	0				37	0			
	0				38	0			
19	0				39	0			
20	0				40	0			
	i Ramp Tei								
Number	Config.	Control	Study Peri	od Descript	ion				
1	0	0	0						
2	0	0	0						
3	0	0	0						
4	0	-	0						
5	U	U	0				l		

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			Out	put Summa	ary				
General Information)								
Project description:	Project I-60	005 (I-87 W	Videning) - P	roposed					
Analyst:	JJS		Date:	3/1/2019		Area type:		Jrban	
First year of analysis:	2035								
Last year of analysis:									
Crash Data Descrip	tion								
Freeway segments	Segment c	rash data a	available?		No	First year o	f crash data	:	
	Project-lev	el crash da	ta available?	?	No	Last year o	f crash data	:	
Ramp segments	Segment c	rash data a	available?		No	First year o	f crash data	:	
	Project-lev	el crash da	ita available?	?	No	Last year o	f crash data	:	
Ramp terminals	Segment c	rash data a	available?		No	First year o	f crash data	:	
		el crash da	ita available?	?	No	Last year o	f crash data	:	
Estimated Crash Sta	atistics								
Crashes for Entire F	acility			Total	K	Α	В	С	PDO
Estimated number of crash	nes during Study	Period, cras	hes:	201.6	1.6	4.2	22.8	36.5	136.5
Estimated average crash fi	req. during Stud	ly Period, cra:	shes/yr:	201.6	1.6	4.2	22.8	36.5	136.5
Crashes by Facility	Component	f	Nbr. Sites	Total	K	Α	В	С	PDO
Freeway segments, o	rashes:		8	201.6	1.6	4.2	22.8	36.5	136.5
Ramp segments, cras	shes:		0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp term	inals, crashe	es:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crashes for Entire F	acility by Y	ear	Year	Total	K	Α	В	С	PDO
Estimated number of	crashes dur	ing	2035	201.6	1.6	4.2	22.8	36.5	136.5
the Study Period, cra	shes:		2036						
			2037						
			2038						
			2039						
			2040						
			2041						
			2042						
			2043						
			2044						
			2045						
			2046						
			2047						
			2048						
			2049						
			2050						
			2051						
			2052						
			2053						
			2054						
			2055 2056						
			2056				-		
				i i			I I		
Distribution of Cree	has for Enti	iro Facilitu	2058						
Distribution of Cras			2058	Fetimo	ted Numb	er of Crach	es During t	he Study I	Period
Distribution of Cras		ire Facility n Type Cat	2058				es During t		
Crash Type	Crash	n Type Cat	2058	Total	K	Α	В	С	PDO
	Crash Head-on cr	Type Cat	2058	Total 0.6	K	A	B 0.2	C 0.2	PDO 0.2
Crash Type	Crash Head-on cr Right-angle	Type Cat ashes: crashes:	2058	Total	K	Α	В	С	PDO
Crash Type	Crash Head-on cr Right-angle Rear-end cr	rashes: e crashes: crashes:	2058	7otal 0.6 3.6	0.0 0.0	0.0 0.1	0.2 0.6	0.2 0.9	PDO 0.2 2.0
Crash Type	Head-on con Right-angle Rear-end con Sideswipe	rashes: e crashes: crashes: crashes:	2058 tegory	7otal 0.6 3.6 115.9	0.0 0.0 1.0	0.0 0.1 2.6 0.6	0.2 0.6 14.2	0.2 0.9 22.9	9DO 0.2 2.0 75.1 29.0
Crash Type	Head-on cr Right-angle Rear-end c Sideswipe Other multi	rashes: e crashes: crashes: crashes: ple-vehicle	2058 tegory e crashes:	Total 0.6 3.6 115.9 38.8 4.3	0.0 0.0 1.0 0.2	0.0 0.1 2.6 0.6 0.1	B 0.2 0.6 14.2 3.4 0.6	0.2 0.9 22.9 5.5 0.9	9DO 0.2 2.0 75.1 29.0 2.6
Crash Type Multiple vehicle	Head-on cr Right-angle Rear-end c Sideswipe Other multi Total mu	rashes: e crashes: crashes: crashes: ple-vehicle	2058 tegory	Total 0.6 3.6 115.9 38.8 4.3 163.2	0.0 0.0 1.0 0.2 0.0 1.4	0.0 0.1 2.6 0.6 0.1 3.5	B 0.2 0.6 14.2 3.4 0.6 19.0	0.2 0.9 22.9 5.5 0.9 30.5	9DO 0.2 2.0 75.1 29.0 2.6 108.9
Crash Type	Head-on ci Right-angle Rear-end ci Sideswipe Other multi Total mul Crashes w	rashes: e crashes: erashes: crashes: crashes: ple-vehicle titple-vehic ith animal:	tegory crashes:	Total 0.6 3.6 115.9 38.8 4.3	0.0 0.0 1.0 0.2	0.0 0.1 2.6 0.6 0.1	B 0.2 0.6 14.2 3.4 0.6	0.2 0.9 22.9 5.5 0.9	PDO 0.2 2.0 75.1 29.0 2.6 108.9
Crash Type Multiple vehicle	Crash Head-on co Right-angle Rear-end co Sideswipe Other multi Total mu Crashes w Crashes w	rashes: e crashes: crashes: crashes: ple-vehicle tiple-vehic ith animal:	tegory e crashes: le crashes:	Total 0.6 3.6 115.9 38.8 4.3 163.2 0.6 27.5	0.0 0.0 1.0 0.2 0.0 1.4 0.0	0.0 0.1 2.6 0.6 0.1 3.5 0.0	8 0.2 0.6 14.2 3.4 0.6 19.0 0.0 2.7	0.2 0.9 22.9 5.5 0.9 30.5 0.0	PDO 0.2 2.0 75.1 29.0 2.6 108.9 0.6 19.7
Crash Type Multiple vehicle	Head-on control Right-angle Rear-end control Right-angle Other multitorial multicontrol Crashes with Crashes with Crashes with Crashes with Crashes with Crashes with Right-American Right	rashes: e crashes: crashes: crashes: ple-vehicle titple-vehicle ith animal: ith fixed ob	2058 tegory crashes: le crashes: le crashes: ject:	Total 0.6 3.6 115.9 38.8 4.3 163.2 0.6 27.5 4.4	0.0 0.0 1.0 0.2 0.0 1.4 0.0 0.2	0.0 0.1 2.6 0.6 0.1 3.5	B 0.2 0.6 14.2 3.4 0.6 19.0 0.0	0.2 0.9 22.9 5.5 0.9 30.5 0.0 4.3	PDO 0.2 2.0 75.1 29.0 2.6 108.9 0.6
Crash Type Multiple vehicle	Crash Head-on co Right-angle Rear-end co Sideswipe Other multi Total mu Crashes w Crashes w	rashes: e crashes: crashes: crashes: ple-vehicle titple-vehic ith animal: ith fixed ob	2058 degory e crashes: le crashes: le crashes: lject: jject: vehicle:	Total 0.6 3.6 115.9 38.8 4.3 163.2 0.6 27.5	0.0 0.0 1.0 0.2 0.0 1.4 0.0	0.0 0.1 2.6 0.6 0.1 3.5 0.0 0.5	B 0.2 0.6 14.2 3.4 0.6 19.0 0.0 2.7 0.2	0.2 0.9 22.9 5.5 0.9 30.5 0.0	PDO 0.2 2.0 75.1 29.0 2.6 108.9 0.6 19.7 3.8
Crash Type Multiple vehicle	Crash Head-on ci Right-angle Rear-end ci Sideswipe Other multi Total mu Crashes w Crashes w Crashes w Other single	rashes: e crashes: crashes: crashes: ple-vehicle titple-vehic ith animal: ith fixed ob	e crashes: le crashes: le crashes: le crashes: oject: oject: vehicle: crashes	Total 0.6 3.6 115.9 38.8 4.3 163.2 0.6 27.5 4.4 0.6	0.0 0.0 1.0 0.2 0.0 1.4 0.0 0.2 0.0	0.0 0.1 2.6 0.6 0.1 3.5 0.0 0.5 0.0	B 0.2 0.6 14.2 3.4 0.6 19.0 0.0 2.7 0.2	0.2 0.9 22.9 5.5 0.9 30.5 0.0 4.3 0.3	PDO 0.2 2.0 75.1 29.0 2.6 108.9 0.6 19.7 3.8 0.4

			Evalu	ation Site S	ummarı			
General In	formation		Evalu	ation Site S	ullillary			
Project des		Project I-6	005 (I-87 Widening)	Proposed				
Analyst:		JJS	Date:	3/1/2019		Area type:	Urban	
First year o	of analysis:	2035	Total length of freev		for Study I		6.000	
Last year o		2035	1 *	, ,	•			
Site Descr	ription							
Freeway S	Segments							
Number	Lanes	Study Period	Study Period Descri	ption				
		Length (mi)						
1	6	1.190	1-W Lim to St Crv					
2	6		2 - St Crv to Lizard Lick 0	Gore				
3	6	0.550	3 - Gore to Gore					
4	6	0.730	Lizard Lick Gore to End (Crv				
5	6		End Crv to End Crv					
6 7	6	0.720	End Crv to Arendell Gore					
	6		Gore to Gore					
8 9	6	0.480	Arendell Gore to E Limits					
-	0	0.000	0					
10 11	0		0 0					
12	0	0.000	0					
13	0	0.000	0					
14	0	0.000	0					
15	Ö	0.000	0					
16	0		0					
17	0	0.000	0					
18	0	0.000	0					
19	0	0.000	0					
20	0	0.000	0					
Ramp Seg								
	Study Peri			Number	Study Peri			
Number	Study Perion Description				Description			
Number 1	Study Perion Description			21	Description 0			
Number 1 2	Study Perion Description 0			21 22	Description 0 0			
Number 1 2 3	Study Perion Description 0 0			21 22 23	Description 0 0 0			
Number 1 2 3 4	Study Perion Description 0 0 0 0			21 22 23 24	Description 0 0 0 0			
Number 1 2 3 4 5	Study Perion Description 0 0			21 22 23	Description 0 0 0			
Number 1 2 3 4 5 6	Study Period Description 0 0 0 0			21 22 23 24 25	Description 0 0 0 0 0 0			
Number 1 2 3 4 5 6	Study Perion Description 0 0 0 0 0 0 0			21 22 23 24 25 26	Description 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9	Study Perion Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29	Description 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10	Study Perion Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11	Study Perin Description 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12	Study Perin Description 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31 32	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12 13	Study Perion Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31 31 32 33	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14	Study Perion Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31 32 33 34	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	Study Periode St			21 22 23 24 25 26 27 28 29 30 31 32 33 34 35	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	Study Period Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1	Study Period Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	Study Perivoleton Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1	Study Period Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	Study Perivoleton Description 0	1		21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	Study Periode St	rminals	Study Period Descri	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 18 19 20 Crossroac Number	Study Period Description 0	minals Control	-	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 Crossroac Number	Study Periodes Periodes Study Periodes Per	rminals Control	0	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 Crossroac Number	Study Period Description 0	minals Control	-	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 Crossroad Number 1 2 2	Study Periodescription Study	rminals Control 0	0	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			

			Out	put Summ	ary				
General Information)								
Project description:	Project H14	41265a (U	pdate I-87 to	Interstate \$	Standards)	- Existing C	Conditions		
Analyst:	JJS		Date:	3/1/2019		Area type:		Jrban	
First year of analysis:	2035								
Last year of analysis:	2035								
Crash Data Descrip	tion								
Freeway segments	Segment c	rash data a	available?		No	First year o	of crash data	:	
	Project-lev	el crash da	ita available'	?	No	Last year o	f crash data	:	
Ramp segments	Segment c	rash data a	available?		No	First year o	of crash data	:	
	Project-lev	el crash da	ita available'	?	No	Last year o	f crash data	:	
Ramp terminals	Segment c	rash data a	available?		No	First year o	of crash data	:	
		el crash da	ita available'	?	No	Last year o	f crash data		
Estimated Crash Sta	atistics								
Crashes for Entire F	acility			Total	K	Α	В	С	PDO
Estimated number of crash	nes during Study	Period, cras	hes:	145.8	1.5	3.8	19.8	30.5	90.2
Estimated average crash fi	req. during Stud	ly Period, cra:	shes/yr:	145.8	1.5	3.8	19.8	30.5	90.2
Crashes by Facility	Component	t	Nbr. Sites	Total	K	Α	В	С	PDO
Freeway segments, o	rashes:		6	145.8	1.5	3.8	19.8	30.5	90.2
Ramp segments, cras			0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp term	inals, crashe	es:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crashes for Entire F	acility by Y	ear	Year	Total	K	Α	В	С	PDO
Estimated number of	crashes dur	ing	2035	145.8	1.5	3.8	19.8	30.5	90.2
the Study Period, cra	shes:		2036						
			2037						
			2038						
			2039						
			2040						
			2041						
			2042						
			2043						
			2044						
			2045						
			2046						
			2047						
			2048						
			2049						
			2050						
			2051						
			2052 2053						
			2053						
			2054	-					
			2056						
			2057						
			2057						
Distribution of Cras	hes for Enti	re Facility						ŀ	
				Estima	ted Numb	er of Crash	es During 1	he Study I	Period
Crash Type	Crash	n Type Cat	tegory	Total	K	A	B	C	PDO
Multiple vehicle	Head-on cr	ashes:		0.3	0.0	0.0	0.1	0.1	0.1
	Right-angle			1.4	0.0	0.0	0.3	0.4	0.7
	Rear-end o			42.9	0.5	1.2	6.2	9.6	25.3
	Sideswipe			14.0	0.1	0.3	1.5	2.3	9.8
			crashes.	1.6	0.0	0.0	0.3	0.4	0.9
		ple-vehicle					8.3	12.9	
	Other multi			60.1	0.6	1.6			36.7
Single vehicle	Other multi Total mu	tiple-vehic	le crashes:	60.1 1.3	0.6	1.6 0.0	0.0	0.1	36.7 1.2
Single vehicle	Other multi Total mu Crashes w	Itiple-vehic	le crashes:						
Single vehicle	Other multi Total mu	Itiple-vehic ith animal: ith fixed ob	le crashes: ject:	1.3	0.0	0.0	0.0	0.1	1.2
Single vehicle	Other multi Total mul Crashes w Crashes w	Itiple-vehic ith animal: ith fixed ob ith other ob	le crashes: nject: nject:	1.3 61.5	0.0	0.0 1.6	0.0 8.3	0.1 12.7	1.2 38.3
Single vehicle	Other multi Total mu Crashes w Crashes w Crashes w	Itiple-vehic ith animal: ith fixed ob ith other ob ith parked	le crashes: ject: pject: vehicle:	1.3 61.5 9.1	0.0 0.6 0.0	0.0 1.6 0.1	0.0 8.3 0.6	0.1 12.7 0.9	1.2 38.3 7.4
Single vehicle	Other multi Total multi Crashes w Crashes w Crashes w Crashes w Other single	Itiple-vehic ith animal: ith fixed ob ith other ob ith parked	le crashes: nject: nject: vehicle: crashes	1.3 61.5 9.1 1.3	0.0 0.6 0.0	0.0 1.6 0.1 0.0	0.0 8.3 0.6 0.2	0.1 12.7 0.9 0.3	1.2 38.3 7.4 0.9

			Evaluati	on Cito Ci	ımmarıı			—
General In	formation		Evaluati	on Site S	инна у			
Project des		Project H1	41265a (Update I-87 to	Interstate	Standards)	- Existing (Conditions	
Analyst:		JJS		3/1/2019		Area type:	Urban	
First year o	of analysis:	2035	Total length of freeway		for Study F		22.280	
Last year o		2035	,	•	•	` '		
Site Desci	ription							
Freeway S	Segments							
Number	Lanes	Study Period	Study Period Description	on				
		Length (mi)						
1	4	3.300	US 264 to NC 39					
2	4		NC 39 to Rocky Cross					
3	4		Rocky Cross to 231					
4	4		231 to Old Franklin					
5	4		Old Franklin to Bus 64					
6	4		Bus 64 to 58					
7	0		0					
8	0		0					
9	0		0					
10 11	0		0 0					
11	0		0					
13	0							
13	0		0 0					
15	0		0					
16	0		0					
17	0		0					
18	Ö		0					
19	0		0					
20	0	0.000	0					
Ramp Seg	ments							
Number	Study Peri	od		Number	Study Peri	od		
	Description	1			Description	n		
1	0			21	0			
2	0			22	0			
3	0			23	0			
4	0			24	0			
5 6	0			25 26	0 0			
7	0			26 27	0			
8	0			28	0			
9	0			29	0			
10	0			30	0			
11	0			31	0			
12	0			32	0			
13	0			33	0			
14	0			34	0			
15	0			35	0			
16	0			36	0			
17	0			37	0			
18	0			38	0			
19	0			39	0			
20	0			40	0			
	l Ramp Tei							
Number	Config.	Control	Study Period Description	on				
1	0	0	0					$\neg \neg$
2	0	0	0					
3	0	0	0					
4	0	0	0					
5	0	0						

_									
			Out	put Summ	ary				
General Information									
Project description:	Project H14	1265a (U	odate I-87 to	Interstate \$	Standards)	- Proposed			
Analyst:	JJS		Date:	3/1/2019		Area type:	L	Jrban	
First year of analysis:	2035								
Last year of analysis:	2035								
Crash Data Descript	ion								
Freeway segments	Segment cra	ash data a	available?		No	First year o	of crash data:		
	Project-level	crash da	ta available?	?	No		f crash data:		
Ramp segments	Segment cra	ash data a	available?		No	First year o	of crash data:		
	Project-level	crash da	ta available?	?	No	Last year o	f crash data:		
Ramp terminals	Segment cra	ash data a	available?		No	First year o	of crash data:		
		crash da	ta available?	?	No	Last year o	f crash data:		
Estimated Crash Sta									
Crashes for Entire F	acility			Total	K	Α	В	С	PDO
Estimated number of crash	es during Study	Period, cras	hes:	126.7	1.2	3.1	16.2	25.0	81.2
Estimated average crash fr	eq. during Study	Period, cras	shes/yr:	126.7	1.2	3.1	16.2	25.0	81.2
Crashes by Facility	Component		Nbr. Sites	Total	K	Α	В	С	PDO
Freeway segments, c	rashes:		6	126.7	1.2	3.1	16.2	25.0	81.2
Ramp segments, cras	shes:		0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp term	inals, crashes	3:	0	0.0	0.0	0.0	0.0	0.0	0.0
Crashes for Entire F	acility by Ye	ar	Year	Total	K	Α	В	С	PDO
Estimated number of	crashes durin	ıg	2035	126.7	1.2	3.1	16.2	25.0	81.2
the Study Period, cras	shes:		2036						
			2037						
			2038						
			2039						
			2040						
			2041						
			2042						
			2043						
			2044						
			2045						
			2046						
			2047						
			2048						
			2049						
			2050						
			2051						
			2052						
			2053						
			2054						
			2055						
			2056						
			2057						
B			2058						
Distribution of Crasi	nes for Entir	e racility		E-41	dad Norm		as Dureles "	ha Ctaraba	Davie d
Crash Type	Crash	Type Cat	egory	Total			es During t	ne Study I	PDO
Multiple vehicle	Head on	ahaa:			K	Α			
Multiple vehicle	Head-on cra			0.3	0.0	0.0	0.1	0.1	0.1
	Right-angle			1.4 42.4	0.0	0.0 1.2	0.3 6.2	0.4 9.5	0.7 25.1
	Rear-end cr		-	13.8	0.5	0.3	1.5	2.3	9.7
	Sideswipe c		oroohaa	13.8	0.1	0.3	0.3	0.4	0.9
	Other multip								
Cinale vahiele			le crashes:	59.5	0.6	1.6	8.2	12.7	36.4
Single vehicle	Crashes with		ioatı	1.1	0.0	0.0	0.0	0.0	1.0
	Crashes with			48.2	0.4	1.1	5.8	8.9	32.1
	Crashes with			7.4	0.0	0.1	0.4	0.6	6.2
	Crashes with			1.1	0.0		0.1	0.2	0.7
	Other single			9.4	0.1	0.3	1.7	2.6	4.8
	Total singl			67.2	0.6	1.5	8.0	12.3	44.8
		otal cras	iles:	126.7	1.2	3.1	16.2	25.0	81.2

			Evelve	tion Cito C				-
General In	formation		Evalua	tion Site S	ummary			
Project des		Project H1	41265a (Update I-87 to	n Interstate	Standarde	- Proposed		
Analyst:	scription.	JJS		3/1/2019	Otanuarus)	Area type:	Urban	
First year o	of analysis	2035	Total length of freewa		for Study F		22.280	-
Last year o		2035	Total length of freewa	y ocginomic	ioi olaay i	crioa (iiii).	22.200	
Site Descr								
Freeway S								
Number	Lanes	Study Period	Study Period Descript	ion				
		Length (mi)						
1	4	3.300	US 264 to NC 39					
2	4	2.850	NC 39 to Rocky Cross					
3	4		Rocky Cross to 231					
4	4	6.570	231 to Old Franklin					
5	4	_	Old Franklin to Bus 64					
6	4		Bus 64 to 58					
7	0		0					
8	0		0					
9	0		0					
10 11	0	0.000	0					
11	0	0.000	o o					
12	0		0					
14	0	0.000	0					
15	0	0.000	0					
16	0		0					
17	ő	0.000	0					
18	0	0.000	0					
19	0	0.000	0					
20	0	0.000	0					
	monto							
Ramp Seg								
	Study Peri			Number	Study Peri			
Number	Study Perion Description				Description			
Number 1	Study Perion Description			21	Description 0			
Number 1 2	Study Perion Description 0 0			21 22	Description 0 0			
Number 1 2 3	Study Perion Description 0 0 0			21 22 23	Description 0 0 0			
Number 1 2 3 4	Study Perio Description 0 0 0			21 22 23 24	Description 0 0 0 0			
Number 1 2 3 4 5	Study Perio Description 0 0 0 0			21 22 23	Description 0 0 0			
Number 1 2 3 4 5 6	Study Perio Description 0 0 0			21 22 23 24 25	Description 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7	Study Perio Description 0 0 0 0 0 0			21 22 23 24 25 26	Description 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8	Study Perion Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27	Description 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10	Study Perion Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11	Study Perii Description 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12	Study Perii Description 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31 32	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12 13	Study Perion Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31 32 33	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14	Study Perion Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31 32 33 34	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	Study Period Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31 32 33 34 35	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	Study Period Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1	Study Period Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	Study Period Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1	Study Period Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 30 31 32 33 34 35 36 37 38	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	Study Period Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1		21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	Study Period Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	minals	Study Period Descript	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 18 19 20 Crossroac Number	Study Period Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	minals Control		21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 Crossroac Number	Study Periode Study Periode Study Periode Study Periode Study Periode Study St	minals Control	0	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 Crossroac Number	Study Period Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	minals Control		21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 Crossroac Number	Study Period Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	minals Control 0	0	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			

			Out	put Summa	ary				
General Information	1								
Project description:	Project U-614	49 (Update	e I-87 to int	erstate star	ndards) - E	xisting Cond	ditions		
Analyst:	JJS		Date:	3/1/2019		Area type:	U	Jrban	
First year of analysis:	2035								
Last year of analysis:	2035								
Crash Data Descript	tion								
Freeway segments	Segment cras	sh data av	/ailable?		No	First year o	f crash data		
	Project-level	crash data	a available?	?	No		f crash data:		
Ramp segments	Segment cras	sh data av	/ailable?		No	First year o	f crash data		
	Project-level	crash data	a available?	?	No	Last year o	f crash data:		
Ramp terminals	Segment cras	sh data av	/ailable?		No	First year o	f crash data		
	Project-level	crash data	a available?	?	No	Last year o	f crash data:		
Estimated Crash Sta									
Crashes for Entire F	acility			Total	K	Α	В	С	PDO
Estimated number of crash	es during Study P	eriod, crashe	es:	243.8	2.2	5.7	29.5	45.6	160.8
Estimated average crash fr	eq. during Study F	Period, crash	nes/yr:	243.8	2.2	5.7	29.5	45.6	160.8
Crashes by Facility	Component		Nbr. Sites	Total	K	Α	В	С	PDO
Freeway segments, o	rashes:		10	243.8	2.2	5.7	29.5	45.6	160.8
Ramp segments, cras			0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp term	inals, crashes:		0	0.0	0.0	0.0	0.0	0.0	0.0
Crashes for Entire F	acility by Yea	ır	Year	Total	K	Α	В	С	PDO
Estimated number of	crashes during	9	2035	243.8	2.2	5.7	29.5	45.6	160.8
the Study Period, cra-	shes:		2036						
•			2037						
			2038						
			2039						
			2040						
			2041						
			2042						
			2043						
			2044						
			2045						
			2046						
			2047						
			2048						
			2049						
			2050						
			2051						
			2052						
			2053		-			,	
			2054		-				
		L	2055						
		L	2056						
]_	2057						
B			2058						
Distribution of Cras	nes for Entire	racility		-	411-		D	04	·
Crash Type	Crash T	Type Cate	gory				es During t		
N 4 (411 1-11				Total	K	Α	В	С	PDO
Multiple vehicle	Head-on cras			0.6	0.0	0.0	0.2	0.2	0.2
	Right-angle c			3.4	0.0	0.1	0.6	0.9	1.8
	Rear-end cra			108.5	1.0 0.3	2.7 0.7	14.1 3.4	21.7 5.2	68.9 26.6
	Sideswipe cra			36.1					
	Other multiple			4.0	0.0	0.1	0.6	0.9	2.4
Oin ale contribute	Total multip		crashes:	152.7	1.4	3.6	18.8	29.0	99.9
Single vehicle	Crashes with		4:	1.5	0.0	0.0	0.0	0.1	1.3
	Crashes with			65.4	0.6	1.5	7.8	12.0	43.6
	Crashes with			10.0	0.0	0.1	0.5	8.0	8.5
	Crashes with			1.4	0.0		0.2	0.2	1.0
	Other single-			12.8	0.2	0.4	2.2	3.4	6.5
	Total single	e-venicie c	rasnes:	91.1	0.8	2.1	10.8	16.6	60.8
	-	otal crashe		243.8	2.2	5.7	29.5	45.6	160.8

			Evalu	ation Site S	ummary			
General In	formation		Lvuiu	ution one o	annina y			
Project des		Project U-6	6149 (Update I-87 to	interstate sta	ndards) - F	xistina Con	ditions	
Analyst:	onption.	JJS	Date:	3/1/2019	induidoj L	Area type:	aidono	Urban
First year o	f analysis	2035	Total length of freew		for Study F		15.220	
Last year o		2035	rotal longth of hoon	ay cogmona	, ioi olaay i	01100 (1111).	10.220	
Site Descr		2000	<u> </u>					
Freeway S								
Number	Lanes	Ctudy Doring	Study Period Descri	ntion		1		
radifibei	Lancs	Length (mi)	Olddy i Cilod Descri	ption				
1	4	2.270	58 to Red Oak					
2	4	2.330	Red Oak to Old Carriage					
3	4	1.180	Old Carriage to I-95					
4	4	1.760	I-95 to Winstead					
5	4	0.860	Winstead to Bus 64					
6	4	1.000	Bus 64 to Wesleyan					
7	4	0.700	Wesleyan to Benvenue					
8	4	0.940	Benvenue to Centura					
9	4	2.260	Centura to Raleigh					
10	4	1.920	Raleigh to Thomas					
11	0	0.000	0					
12	0	0.000	0					
13	0	0.000	0					
14	Ö	0.000	0					
15	Ö	0.000	0					
16	0	0.000	0					
17	0	0.000	0					
18	0	0.000	0					
19	0	0.000	0					
20	0	0.000	0					
Ramp Seg						•		
Number	Study Peri			Number	Study Peri			
	Description	1			Description	1		
1	0			21	0			
2	0			22	0			
3	0			23	0			
4	0			24	0			
5	0			25	0			
6	0			26	0			
7	0			27 28	0			
8	0			28 29	0			
9 10	0			30	0			
10	0			30	0			
12	0			32	0			
13	0			33	0			
14	0			34	0			
15	0			35	0			
16	0			36	0			
17	0			37	0			
18	0			38	0			
19	0			39	0			
20	0			40	0			
	Ramp Te	rminals						
Number	Config.	Control	Study Period Descri	ption				
1	0	0	0					
2	0	0	0					
3	0	0	0			1		
4	0	0	0					
5	0	0	0					

			Out	put Summa	ary				
General Information									
Project description:		149 (Upda	ite I-87 to int		dards) - P				
Analyst:	JJS		Date:	3/1/2019		Area type:	l	Jrban	
First year of analysis:									
Last year of analysis:									
Crash Data Descrip									
Freeway segments	Segment c				No		f crash data		
			ta available?	?	No		f crash data		
Ramp segments	Segment c				No		f crash data		
			ta available?	?	No		f crash data		
Ramp terminals	Segment c				No		f crash data		
		el crash da	ta available?	?	No	Last year o	f crash data		
Estimated Crash St									
Crashes for Entire I				Total	K	Α	В	С	PDO
Estimated number of crash				220.5	1.9	5.0	26.0	40.1	147.5
Estimated average crash f				220.5	1.9	5.0	26.0	40.1	147.5
Crashes by Facility		!	Nbr. Sites	Total	K	Α	В	С	PDO
Freeway segments, or			10	220.5	1.9	5.0	26.0	40.1	147.5
Ramp segments, cra			0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp term			0	0.0	0.0	0.0	0.0	0.0	0.0
Crashes for Entire I			Year	Total	K	Α	В	С	PDO
Estimated number of		ing	2035	220.5	1.9	5.0	26.0	40.1	147.5
the Study Period, cra	shes:		2036						
			2037						
			2038						
			2039						
			2040						
			2041						
			2042						
			2043						
			2044						
			2045						
			2046						
			2047						
			2048						
			2049						
			2050						
			2051						
			2052						
			2053 2054						
			2054						
			2055						
			2056						
			2057				-		
Distribution of Cros	has for Enti	ro Facilita		l l			l l		
DISTINUTION OF CIAS				Fetima	ted Numb	or of Crach	es During t	he Study F	Period
Distribution of Crashes for Entire Facility Crash Type Crash Type Cate			egory	Total	K	Δ	B B	C	PDO
Crash Type	Crasi	, ,		i Ottai	11				
				0.6	በበ	0.0	() 11		
	Head-on cr	ashes:		0.6 3.4	0.0		0.1	0.2	
	Head-on cr Right-angle	ashes:		3.4	0.0	0.1	0.6	0.9	1.8
	Head-on cr Right-angle Rear-end c	ashes: crashes: rashes:							1.8 68.3
	Head-on cr Right-angle Rear-end c Sideswipe	rashes: e crashes: erashes: crashes:	crashes:	3.4 107.5 35.7	0.0 1.0 0.2	0.1 2.7 0.6	0.6 13.9 3.3	0.9 21.5 5.2	1.8 68.3 26.3
	Head-on cr Right-angle Rear-end c Sideswipe Other multi	rashes: crashes: crashes: crashes: ple-vehicle		3.4 107.5 35.7 4.0	0.0 1.0 0.2 0.0	0.1 2.7 0.6 0.1	0.6 13.9 3.3 0.6	0.9 21.5 5.2 0.9	1.8 68.3 26.3 2.4
Multiple vehicle	Head-on cr Right-angle Rear-end c Sideswipe Other multi Total mul	rashes: crashes: crashes: crashes: ple-vehicle tiple-vehic	crashes:	3.4 107.5 35.7 4.0 151.2	0.0 1.0 0.2 0.0 1.4	0.1 2.7 0.6 0.1 3.6	0.6 13.9 3.3 0.6 18.6	0.9 21.5 5.2 0.9 28.7	1.8 68.3 26.3 2.4 99.0
Multiple vehicle	Head-on cr Right-angle Rear-end c Sideswipe Other multi Total mul Crashes wi	ashes: e crashes: crashes: crashes: ple-vehicle tiple-vehic th animal:	le crashes:	3.4 107.5 35.7 4.0 151.2 1.1	0.0 1.0 0.2 0.0 1.4 0.0	0.1 2.7 0.6 0.1 3.6 0.0	0.6 13.9 3.3 0.6 18.6 0.0	0.9 21.5 5.2 0.9 28.7 0.0	1.8 68.3 26.3 2.4 99.0 1.1
Multiple vehicle	Head-on cr Right-angle Rear-end c Sideswipe Other multi Total mul Crashes wi Crashes wi	ashes: e crashes: crashes: crashes: ple-vehicle tiple-vehic th animal: th fixed ob	le crashes: ject:	3.4 107.5 35.7 4.0 151.2 1.1 49.7	0.0 1.0 0.2 0.0 1.4 0.0 0.4	0.1 2.7 0.6 0.1 3.6 0.0	0.6 13.9 3.3 0.6 18.6 0.0 5.3	0.9 21.5 5.2 0.9 28.7 0.0 8.2	1.8 68.3 26.3 2.4 99.0 1.1 34.7
Multiple vehicle	Head-on cr Right-angle Rear-end c Sideswipe Other multi Total mul Crashes wi Crashes wi	ashes: e crashes: rashes: crashes: ple-vehicle tiple-vehic th animal: th fixed ob th other ob	ject:	3.4 107.5 35.7 4.0 151.2 1.1 49.7 7.8	0.0 1.0 0.2 0.0 1.4 0.0 0.4	0.1 2.7 0.6 0.1 3.6 0.0 1.0	0.6 13.9 3.3 0.6 18.6 0.0 5.3 0.4	0.9 21.5 5.2 0.9 28.7 0.0 8.2 0.6	1.8 68.3 26.3 2.4 99.0 1.1 34.7 6.7
Crash Type Multiple vehicle Single vehicle	Head-on cr Right-angle Rear-end c Sideswipe Other multi Total mul Crashes wi Crashes wi Crashes wi	ashes: e crashes: rashes: crashes: ple-vehicle tiple-vehic th animal: th fixed ob th other of th parked	ject: ject: vehicle:	3.4 107.5 35.7 4.0 151.2 1.1 49.7 7.8	0.0 1.0 0.2 0.0 1.4 0.0 0.4 0.0	0.1 2.7 0.6 0.1 3.6 0.0 1.0 0.1	0.6 13.9 3.3 0.6 18.6 0.0 5.3 0.4	0.9 21.5 5.2 0.9 28.7 0.0 8.2 0.6 0.2	26.3 2.4 99.0 1.1 34.7 6.7 0.8
Multiple vehicle	Head-on cr Right-angle Rear-end c Sideswipe Other multi Total mul Crashes wi Crashes wi Crashes wi Crashes wi Other singl	ashes: e crashes: rashes: crashes: ple-vehicle tiple-vehic th animal: th fixed ob th other of th parked	ject: oject: vehicle: crashes	3.4 107.5 35.7 4.0 151.2 1.1 49.7 7.8	0.0 1.0 0.2 0.0 1.4 0.0 0.4	0.1 2.7 0.6 0.1 3.6 0.0 1.0	0.6 13.9 3.3 0.6 18.6 0.0 5.3 0.4	0.9 21.5 5.2 0.9 28.7 0.0 8.2 0.6	1.8 68.3 26.3 2.4 99.0 1.1 34.7 6.7

			Evaluat	ion Site S	ummary			
General In	formation		Lvaiuat	ion one o	ullillal y			
Project des		Drojoet III 6	6149 (Update I-87 to in	torotato eta	ndordo) D	roposod		
	сприоп.				nuarus) - P		li tata a a	
Analyst:	£1	JJS		3/1/2019	f Ot	Area type:	Urban	
First year o		2035	Total length of freeway	y segments	for Study I	Perioa (mi):	15.220	
Last year o		2035						
Site Descr								
Freeway S	egments							
Number	Lanes	Study Period	Study Period Descript	ion				
		Length (mi)						
1	4	2.270	58 to Red Oak					
2	4		Red Oak to Old Carriage					
3	4	1.180	Old Carriage to I-95					
4	4	1.760	I-95 to Winstead					
5	4	0.860	Winstead to Bus 64					
6	4	1.000	Bus 64 to Wesleyan					
7	4	0.700	Wesleyan to Benvenue					
8	4	0.940	Benvenue to Centura					
9	4	2.260	Centura to Raleigh					
10	4	1.920	Raleigh to Thomas					
11	0		0					
12	0		0					
13	0		0					
14	0	0.000	0					
15	0		o					
16	0	0.000	0					
17	0		0					
18	0	0.000	0					
19	0	0.000	0					
20	0	0.000	0					
Ramp Seg		0.000	<u> </u>			I		
	Study Perio	nd		Number	Study Peri	hoi		
	Description				Description			
1	0			21	0			
	0			22	0			
	0			23	0			
	0			24	0			
	0			25	0			
	0			26	0			
	0			27	0			
-	0			28	0			
	0			29	0			
-	0			30	0			
	0			31	0			
	0			32	0			
13	0			33	0			
-	0			34	0			
	0			35 36	0			
	0			37	0			
	0			38	0			
19 20	0			39	0			
	-	minala		40	0			
Number	Ramp Ter Config.		Study Period Descripti	ion				
1	0	0						
2			0					
3	0	0	0 0					
3	0	0	0					
5	0							
э	U	U	0			1		

Analyst: JJS First year of analysis: 2035 Last year of analysis: 2035 Crash Data Description Freeway segments Segmer Project- Ramp segments Segmer Project- Ramp terminals Segmer Project- Estimated Crash Statistics Crashes for Entire Facility Estimated number of crashes during 3 Crashes by Facility Compon Freeway segments, crashes: Crossroad ramp terminals, cra Crashes for Entire Facility b Estimated number of crashes the Statistics Crashes of Cras	t crasevel of t	sh data a crash da sh data a crash da sh data a crash da eriod, cras	7 Upgrade te Date: available? ta available? ta available? ta available? ta available? ta available?	3/1/2019	No No No No No No No No O O O O O O O O	First year of Last	f crash data f crash data f crash data f crash data f crash data f crash data		
Project description: Project Analyst: JUS First year of analysis: 2035 Crash Data Description Freeway segments Segmer Project- Ramp segments Segmer Project- Ramp terminals Segmer Project- Estimated Crash Statistics Crashes for Entire Facility Estimated average crash free, during its Crashes by Facility Compon Freeway segments, crashes: Crossroad ramp terminals, cra Crashes for Entire Facility Segments or segments, crashes: Crossroad ramp terminals, cra Crashes for Entire Facility Segments, crashes: Crossroad ramp terminals, cra Crashes for Entire Facility Segments, crashes: Crossroad ramp terminals, cra Crashes for Entire Facility Segments, crashes: Distribution of Crashes for E Crash Type Crash Type Multiple vehicle Head-on Right-ar	t crasevel of t	sh data a crash da sh data a crash da sh data a crash da eriod, cras	Date: available? ta available? ta available? ta available? ta available? ta available? Mr. Sites 4 0	7 Total 70.2 Total Total Total	No No No No No No O.7	First year of Last	f crash data f crash data f crash data f crash data f crash data f crash data		
Analyst: JJS First year of analysis: 2035 Last year of analysis: 2035 Crash Data Description Freeway segments Segmer Project- Ramp segments Segmer Project- Ramp terminals Segmer Project- Segmer Project- Estimated Crash Statistics Crashes for Entire Facility Estimated number of crashes during Settimated varge crash free, during Crashes by Facility Componers of the Componers of t	t crasevel of t	sh data a crash da sh data a crash da sh data a crash da eriod, cras	Date: available? ta available? ta available? ta available? ta available? ta available? Mr. Sites 4 0	7 Total 70.2 Total Total Total	No No No No No No O.7	First year of Last	f crash data f crash data f crash data f crash data f crash data f crash data		
First year of analysis: 2035 Last year of analysis: 2035 Crash Data Description Freeway segments Ramp segments Ramp segments Segmer Project- Ramp terminals Segmer Project- Ramp terminals Segmer Project- Segmer Ramp terminals Segmer Project- Segmer Ramp terminals Segmer Ramp terminals Crashes for Entire Facility Carshes by Facility Compon Freeway segments, crashes: Crossroad ramp terminals, cra Crashes for Entire Facility b Estimated number of crashes the Study Period, crashes: Distribution of Crashes for Entire Facility b Crash Type Crash Type Crash Type Crash Type Multiple vehicle Head-on Right-ar	evel of t crassevel o	crash da sh data a crash da sh data a crash da eriod, cras Period, cras	available? Ita available? Ita available? Ita available? Ita available? Ita available Ita available	? ? ?	No No No No No K	First year of Last	f crash data f crash data f crash data f crash data f crash data f crash data		
Last year of analysis: 2035 Crash Data Description Freeway segments Segmer Project- Ramp segments Segmer Project- Ramp terminals Segmer Project- Estimated Crash Statistics Crashes for Entire Facility Compon Freeway segments, crashes during Sestimated average crash free, during to Crashes by Facility Compon Freeway segments, crashes: Crossroad ramp terminals, cra Crashes for Entire Facility be Estimated average crash ses the Study Period, crashes: Distribution of Crashes for Exception of Crashes the Study Period, crashes: Multiple vehicle Head-on Right-ar	evel of t crassevel o	crash da sh data a crash da sh data a crash da eriod, cras Period, cras	ta available' available? ta available? available? ta available? ta available hes: shes/yr: Nbr. Sites 0	7 Total 70.2 70.2 Total	No No No No No K	Last year of Eirst year of Eirst year of Eirst year of East year of Last year of Last year of A	f crash data f crash data f crash data f crash data f crash data		
Crash Data Description Freeway segments Project- Ramp segments Segmer Project- Ramp terminals Segmer Project- Ramp terminals Segmer Project- Segment S	evel of t crassevel o	crash da sh data a crash da sh data a crash da eriod, cras Period, cras	ta available' available? ta available? available? ta available? ta available hes: shes/yr: Nbr. Sites 0	7 Total 70.2 70.2 Total	No No No No No K	Last year of Eirst year of Eirst year of Eirst year of East year of Last year of Last year of A	f crash data f crash data f crash data f crash data f crash data		
Freeway segments Ramp segments Ramp segments Ramp segments Segmer Project- Segments Project- Segments Project- Segments Project- Segmer Projec	evel of t crassevel o	crash da sh data a crash da sh data a crash da eriod, cras Period, cras	ta available' available? ta available? available? ta available? ta available hes: shes/yr: Nbr. Sites 0	7 Total 70.2 70.2 Total	No No No No No K	Last year of Eirst year of Eirst year of Eirst year of East year of Last year of Last year of A	f crash data f crash data f crash data f crash data f crash data		
Project- Ramp segments Segmer Project- Ramp terminals Segmer Project- Estimated Crash Statistics Crashes for Entire Facility Estimated average crash free, during its continuous segments, crashes by Facility Componers are preventionally crashes by Facility Componers are preventionally crashes by Facility Componers are preventionally crashes for Entire Facility by Estimated number of crashes ithe Study Period, crashes: Distribution of Crashes for Examples of Crashes ithe Study Period, crashes for Entire Facility by Estimated number of crashes ithe Study Period, crashes ithe Study Period, crashes for Examples it is supported by Period Crashes for Examples it is supported by	evel of t crassevel o	crash da sh data a crash da sh data a crash da eriod, cras Period, cras	ta available' available? ta available? available? ta available? ta available hes: shes/yr: Nbr. Sites 0	7 Total 70.2 70.2 Total	No No No No No K	Last year of Eirst year of Eirst year of Eirst year of East year of Last year of Last year of A	f crash data f crash data f crash data f crash data f crash data		
Ramp segments Segmer Project- Ramp terminals Segmer Project- Estimated Crash Statistics Crashes for Entire Facility Estimated number of crashes during Statimated average crash freq during: Crashes by Facility Compon Freeway segments, crashes: Crossroad ramp terminals, cra Crashes for Entire Facility Estimated average stath freq during: Crashes for Entire Facility Segments, crashes: Crossroad ramp terminals, cra Crashes for Entire Facility Segments, crashes: Crossroad ramp terminals, cra Crashes for Entire Facility Segments, crashes: Distribution of Crashes for E Crash Type Multiple vehicle Head-on Right-ar	t cras evel of t cras evel of tudy Pottudy F ent	sh data a crash da sh data a crash da eriod, cras	available? available? available? available? ta available hes: shes/yr: Nbr. Sites 4	7 Total 70.2 70.2 Total	No No No No K 0.7 0.7	First year of Last year of East year of Last year of Last year of Last year of A	f crash data f crash data f crash data f crash data f crash data		
Project- Ramp terminals Segmer Project- Estimated Crash Statistics Crashes for Entire Facility Estimated number of crashes during Sestimated number of crashes during Sestimated average crash free, during segments, crashes: Crossroad ramp terminals, cracrashes for Entire Facility b Estimated number of crashes the Study Period, crashes: Distribution of Crashes for Entire Facility b Crash Type Crash Type Multiple vehicle Head-on Right-ar	evel of t crass evel of udy Postudy Po	crash da sh data a crash da eriod, cras Period, cras	ta available' available? ta available' hes: shes/yr: Nbr. Sites 4 0	70.2 70.2 70.2 Total	No No No K 0.7	Last year of First year of Last year of A 1.8	f crash data f crash data f crash data B	: :	
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Crashes for Entire Facility by Estimated number of crashes: the Study Period, crashes: Distribution of Crashes for E Crash Type Crash Type Head-or Right-ar	' Yea	ır	01	0.0	0.0	0.0	0.0	0.0	0.0
Distribution of Crashes for E Crash Type Multiple vehicle Right-ar			<u> </u>	0.0	0.0	0.0	0.0	0.0	0.0
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Multiple vehicle Head-or Right-ar				Fetima	ted Numb	er of Crash	os Durina i	he Study I	Period
Right-ar	ısh T	ype Cat	egory	Total	K	A	B B	C	PDO
Right-ar	cras	hes.		0.1	0.0		0.0	0.1	0.0
				0.1	0.0		0.0	0.1	0.0
				20.8	0.0	0.0	3.2	4.9	11.9
Sideswi	d cra			6.7	0.2	0.0	0.8	1.2	4.6
			crashes:	0.7	0.0	0.0	0.0	0.2	0.4
	e cra		le crashes:	29.2	0.0	0.0	4.2	6.6	17.3
Single vehicle Crashes	e cra ultiple		ic Gasties.	0.6	0.0	0.0	0.0	0.0	0.6
	oe cra ultiple nultip	fixed ob	iect:	29.4	0.0	0.0	3.8	5.9	18.8
	ne cra ultiple nultip with	other ob		4.4	0.0	0.7	0.3	0.4	3.7
	ultiple nultip with with	OUTE OF		0.6	0.0		0.3	0.4	0.4
	ultiple nultiple with with with	narked		5.9	0.0	0.0	1.1	1.7	2.8
	ultiple nultiple with with with with	parked v	crashes:	41.0	0.1	1.0	5.2	8.2	26.3
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General In	formation		Eva	luation Site S	ummary				
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	сприоп.	JJS		3/1/2019	Standards			Urban	
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18	0	0.000	0						
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Estimated number of cras	shes during	2035 2036 2037 2038 2039 2040 2041						
		2036 2037 2038 2039 2040 2041	62.7	0.6	1.5	7.9	12.3	40.5
		2037 2038 2039 2040 2041						
		2038 2039 2040 2041						
		2039 2040 2041						
		2040 2041						
		2041						
		2042						
		2043						
		2044						
		2045						
		2046						
		2047						
		2048						
		2049						
		2050						
		2051						
		2052						
		2053						
		2054						
		2055						
		2056			ļļ			
		2057 2058						
Diadribution of Cuc-1	for Entire For III							
Distribution of Crashes	ior Entire Facilit	y r	Entire	lad Numb	or of Crock	oo During 4	an Ctuder F	Poriod
Crash Type	Crash Type Ca	ategory	Total	K K	er of Crash	B During tr	C C	PDO
Multiple vehicle Hea	ad-on crashes:	-	0.1	0.0	0.0	0.0	0.1	0.0
	ht-angle crashes		0.1	0.0	0.0	0.0	0.1	0.0
	ar-end crashes:		20.6	0.0	0.0	3.1	4.9	11.8
	leswipe crashes:	ł	6.7	0.2	0.0	0.8	1.2	4.5
	ner multiple-vehic	le crashes	0.8	0.0	0.0	0.0	0.2	0.4
	otal multiple-vehi		28.9	0.0	0.0	4.2	6.5	17.1
	ashes with animal		0.6	0.0	0.0	0.0	0.0	0.5
	AUTOU WILL GUILLIA		24.3	0.0	0.5	2.7	4.2	16.7
		DICCL.			0.0	0.2	0.3	3.2
Cia	ashes with fixed o			0.0			0.3	
Cra	ashes with fixed o	object:	3.8	0.0				0.4
	ashes with fixed o ashes with other o ashes with parked	object: d vehicle:	3.8 0.5	0.0	0.0	0.1		0.4 2.5
Oth	ashes with fixed o	bject: d vehicle: crashes	3.8			0.1	1.2	0.4 2.5 23.4

			Postor	41 014- 0				
General In	formation		Evalua	tion Site S	ummary			
		Drainat I14	1100Eh /I 07 I Ingrada	to Interstate	Ctandarda	\ Dranges	a	
Project des	scription:	JJS	41265b (I-87 Upgrade		Standards			
Analyst:	f analysis	2035	Date:	3/1/2019	for Chiele I	Area type:	Urban 12.040	
First year of Last year of		2035	Total length of freewa	ly segments	ioi Siudy i	Period (IIII).	12.040	
Site Descr		2033						
Freeway S								
Number	Lanes	Ctudy Dorind	Study Period Descript	tion				
Number	Lancs	Length (mi)	Olday I Choa Descrip					
1	4	3.170	Thomas overpass to Kingsl	horo				
2	4	5.820	Kingsboro to McNair	5010				
3	4		Mcnair to 258					
4	4	0.730	258 to Mutual					
5	0	0.000	0					
6	0		0					
7	Ö		0					
8	0		0					
9	0		0					
10	0	0.000	0					
11	0	0.000	0					
12	0	0.000	0					
13	0	0.000	0					
14	0		0					
15	0		0					
16	0		0					
17	0		0					
18	0	0.000	0					
19	0		0					
20 Ramp Seg	0 monte	0.000	0					
	Study Peri	nd		Number	Study Peri	od		
radilibei	Description			Number	Description			
1	0			21	0			
2	0			22	0			
3	0			23	0			
	0			24	0			
	0			25	0			
	0			26	0			
	0			27	0			
	0			28	0			
	0			29	0			
	0			30 31	0			
	0			31	0			
	0			33	0			
-	0			34	0			
	0			35	0			
	0			36	0			
	0			37	0			
	0			38	0			
	0			39	0			
20	0			40	0			
	i Ramp Tei							
Number	Config.	Control	Study Period Descript	tion				
1	0	0	0					
2	0	0	0					
3	0	0	0			1		
4	0	0	0					
5	0	0	0			1		

Interactive Highway Safety Design Model Crash Prediction Evaluation Report

Version v14.0.0 (Sep 26, 2018)

March 1, 2019

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Under no circumstances will the FHWA be liable to the end-user for any damages or claimed lost profits, lost savings, or other incidental or consequential damages rising out of the use or inability to use the software (even if these organizations have been advised of the possibility of such damages), or for any claim by any other party.

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Report Overview

Report Generated: Mar 1, 2019 11:22 AM

Report Template: System: Single Page [System] (mlcpm3, Dec 6, 2018 10:11 AM)

Evaluation Date: Tue Feb 19 12:53:34 CST 2019 **IHSDM Version:** v14.0.0 (Sep 26, 2018) Crash Prediction Module: v9.0.0 (Sep 26, 2018)

User Name: sandbergj Organization Name:

Phone: E-Mail:

Project Title: NCDOT INFRA - R-5869A

Project Comment: Created Tue Feb 19 08:38:21 CST 2019

Project Unit System: U.S. Customary

Highway Title: US 17

Highway Comment: Created Tue Feb 19 08:38:57 CST 2019

Highway Version: 4

Evaluation Title: Evaluation 2

Evaluation Comment: Created Tue Feb 19 12:52:49 CST 2019

Minimum Location: 10+00.000 Maximum Location: 30+00.000

Policy for Superelevation: AASHTO 2011 U.S. Customary Calibration: HSM Configuration

Crash Distribution: HSM Configuration

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Type Distribution (Section 1)

Model/CMF: HSM Configuration Empirical-Bayes Analysis: None First Year of Analysis: 2035 Last Year of Analysis: 2035

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Section Types

Section 1 Evaluation

Section: Section 1

Evaluation Start Location: 10+00.000 **Evaluation End Location:** 30+00.000

Area Type: Suburban

Functional Class: Arterial

Type of Alignment: Divided, Multilane Model Category: Urban/Suburban Arterial Calibration Factor: 4D=1.0; 4SG=1.0;

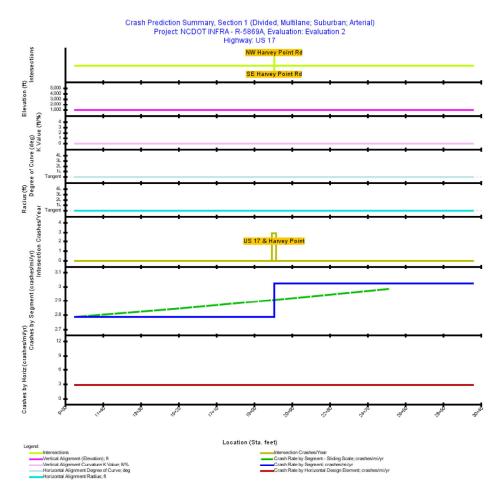


Figure Crash Prediction Summary (Section 1)

										Table
Seg. No.	Туре	Start Location (Sta. ft)	Location	Length (ft)	Length (mi)	AADT	Number Major Commericial Driveways	Number Minor Commericial Driveways	Number Major Industial/Institutional	N Indus

Seg. No.		(Sta. ft)	End Location (Sta. ft)	(ft)	Length (mi)	AADI	Number Major Commericial Driveways	Number Minor Commericial Driveways	Number Major Industial/Institutional	N Indus
1	4D	10+00.000	17+10.000	710.00		2035: 15,200	0	0	0	
2	4D	17+10.000	20+00.000	290.00	0.0549	2035: 15,200	0	0	0	
3	4D	20+00.000	22+60.000	260.00	0.0492	2035: 16,300	0	0	0	
4	4D	22+60.000	30+00.000	740.00	0.1401	2035: 16,300	0	0	0	

Table 2. Evaluation Intersection (Sect

Inter. No.	Title	Location (Sta. ft)	Major AADT	Minor AADT	Legs	Traffic Control	Intersection Type	Approaches w/Left Turn Lanes	w/ Right	Turn on	Pede Vo (crossi
	US 17 & Harvey Point	20+00.000	2035: 16,300	2035: 7,100	4	Signalized	Four-Legged Signalized	2	0	0	

Table 3. Predicted Highway Crash Rates and Frequencies (Section 1)

2035							
2035							
0.3788							
15,750							
3.98							
1.26							
2.72							
Percent of Total Predicted Crashes							
32							
68							
10.5086							
3.3333							
7.1753							

Predicted Travel Crash Rate								
Total Travel (million veh-mi)	2.18							
Travel Crash Rate (crashes/million veh-mi)	1.83							
Travel FI Crash Rate (crashes/million veh-mi)	0.58							
Travel PDO Crash Rate (crashes/million veh-mi)	1.25							

Table 4. Predicted Crash Frequencies and Rates by Highway Segment/Intersectic

Segment Number/Intersection Name/Cross Road	Start Location (Sta. ft)	End Location (Sta. ft)	Length (mi)	for	Predicted Total Crash Frequency (crashes/yr)	Predicted FI Crash Frequency (crashes/yr)	Predicted PDO Crash Frequency (crashes/yr)	Predi (crasl
1	10+00.000	17+10.000	0.1345	0.375	0.3746	0.1036	0.2710	
2	17+10.000	20+00.000	0.0549	0.153	0.1530	0.0423	0.1107	
US 17 & Harvey Point	20+00.000			2.880	2.8803	0.9580	1.9223	
3	20+00.000	22+60.000	0.0492	0.149	0.1489	0.0413	0.1076	
4	22+60.000	30+00.000	0.1402	0.424	0.4237	0.1174	0.3063	
All Segments			0.3788	1.100	1.1003	0.3046	0.7956	
All Intersections				2.880	2.8803	0.9580	1.9223	
Total			0.3788	3.981	3.9805	1.2626	2.7179	

Table 5. Predicted Crash Frequencies and Rates by Horizontal Design Element (Section 1)

Title	Start Location (Sta. ft)	End Location (Sta. ft)	Length (mi)	for	Predicted Total Crash Frequency (crashes/yr)	Predicted FI Crash Frequency (crashes/yr)	PDO Crash Frequency	Predicted Crash Rate (crashes/mi/yr)
Tangent	10+00.000	30+00.000	0.3788	1.100	1.1003	0.3046	0.7956	2.9047

Table 6. Predicted Crash Frequencies by Year (Section 1)

Year	Total Crashes	FI Crashes	Percent FI (%)	PDO Crashes	Percent PDO (%)
2035	3.98	1.26	0.317	2.72	0.683
Total	3.98	1.26	0.317	2.72	0.683
Average	3.98	1.26	0.317	2.72	0.683

Note: Fatal and Injury Crashes and Property Damage Only Crashes do not necessarily sum up to Total Crashes because the distribution of these three crashes had been derived independently.

Note: Fatal and Injury Crashes and Property Damage Only Crashes do not necessarily sum up to Total Crashes because the distribution of these three crashes had been derived independently.

been derived independently. **Note:** Fatal and Injury Crashes and Property Damage Only Crashes do not necessarily sum up to Total Crashes because the distribution of these three crashes had been derived independently.

Table 7. Predicted Five Lane or Fewer Segment Crash Type Distribution (Section 1)

Element Type	Cuach Time	Fatal a	nd Injury		ty Damage Only	Т	otal
Element Type	Crash Type	Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)
Highway Segment	Collision with Animal	0.00	0.0	0.01	0.3	0.01	0.3
Highway Segment	Collision with Bicycle	0.01	0.1	0.00	0.0	0.01	0.1
Highway Segment	Collision with Fixed Object	0.02	0.5	0.15	3.9	0.17	4.4
Highway Segment	Collision with Other Object	0.00	0.0	0.00	0.1	0.00	0.1
Highway Segment	Other Single-vehicle Collision	0.02	0.4	0.02	0.5	0.04	1.0
Highway Segment	Collision with Pedestrian	0.02	0.5	0.00	0.0	0.02	0.5
Highway Segment	Total Segment Single Vehicle Crashes	0.06	1.6	0.19	4.8	0.25	6.4
Highway Segment	Angle Collision	0.01	0.2	0.02	0.5	0.03	0.8
Highway Segment	Driveway-related Collision	0.00	0.0	0.00	0.0	0.00	0.0
Highway Segment	Head-on Collision	0.01	0.1	0.00	0.1	0.01	0.2
Highway Segment	Other Multi-vehicle Collision	0.01	0.3	0.04	1.1	0.06	1.4
Highway Segment	Rear-end Collision	0.20	5.1	0.40	10.1	0.60	15.1
Highway Segment	Sideswipe, Opposite Direction Collision	0.00	0.1	0.00	0.0	0.00	0.1
Highway Segment	Sideswipe, Same Direction Collision	0.01	0.3	0.14	3.4	0.15	3.7
Highway Segment	Total Segment Multiple Vehicle Crashes	0.24	6.1	0.60	15.2	0.85	21.3
Highway Segment	Total Highway Segment Crashes	0.30	7.7	0.80	20.0	1.10	27.6
Intersection	Collision with Animal	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Collision with Bicycle	0.04	1.1	0.00	0.0	0.04	1.1
Intersection	Collision with Fixed Object	0.04	1.0	0.12	2.9	0.16	3.9
Intersection	Non-Collision	0.01	0.2	0.01	0.1	0.01	0.3
Intersection	Collision with Other Object	0.00	0.1	0.01	0.2	0.01	0.3
Intersection	Other Single-vehicle Collision	0.00	0.1	0.00	0.1	0.01	0.1
Intersection	Collision with Parked Vehicle	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Collision with Pedestrian	0.01	0.4	0.00	0.0	0.01	0.4
Intersection	Total Intersection Single Vehicle Crashes	0.11	2.8	0.14	3.4	0.24	6.1
Intersection	Angle Collision	0.29	7.4	0.44	11.0	0.73	18.4
Intersection	Head-on Collision	0.04	1.0	0.05	1.3	0.10	2.4
Intersection	Other Multi-vehicle Collision	0.05	1.2	0.38	9.5	0.42	10.6
Intersection	Rear-end Collision	0.38	9.6	0.86	21.7	1.25	31.3
Intersection	Sideswipe	0.08	2.1	0.06	1.4		3.5
Intersection	Total Intersection Multiple Vehicle Crashes	0.85	21.3	1.79	44.9		66.2
Intersection	Total Intersection Crashes	0.96	24.1	1.92	48.3	2.88	72.4
-	Total Crashes	1.26	31.7	2.72	68.3		

Note: Fatal and Injury Crashes and Property Damage Only Crashes do not necessarily sum up to Total Crashes because the distribution of these three crashes had been derived independently.

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Interactive Highway Safety Design Model Crash Prediction Evaluation Report

Version v14.0.0 (Sep 26, 2018)

March 1, 2019

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Report Overview

Report Generated: Mar 1, 2019 11:24 AM

Report Template: System: Single Page [System] (mlcpm3, Dec 6, 2018 10:11 AM)

Evaluation Date: Tue Feb 19 12:55:44 CST 2019 **IHSDM Version:** v14.0.0 (Sep 26, 2018) **Crash Prediction Module:** v9.0.0 (Sep 26, 2018)

User Name: sandbergj
Organization Name:

Phone: E-Mail:

Project Title: NCDOT INFRA - R-5869A

Project Comment: Created Tue Feb 19 08:38:21 CST 2019

Project Unit System: U.S. Customary

Highway Title: Harvey Point Rd

Highway Comment: Created Tue Feb 19 08:49:53 CST 2019

Highway Version: 3

Evaluation Title: Evaluation 1

Evaluation Comment: Created Tue Feb 19 12:55:23 CST 2019

Minimum Location: 10+00.000 Maximum Location: 20+00.000

Policy for Superelevation: AASHTO 2011 U.S. Customary

Calibration: HSM Configuration
Crash Distribution: HSM Configuration

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Type Distribution (Section 1)

Model/CMF: HSM Configuration Empirical-Bayes Analysis: None First Year of Analysis: 2035 Last Year of Analysis: 2035

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Section Types

Section 1 Evaluation

Section: Section 1

Evaluation Start Location: 10+00.000 **Evaluation End Location:** 20+00.000

Area Type: Suburban

Functional Class: Arterial

Type of Alignment: Undivided, Two Lane Model Category: Urban/Suburban Arterial

Calibration Factor: 3T=1.0; 4SG=1.0;

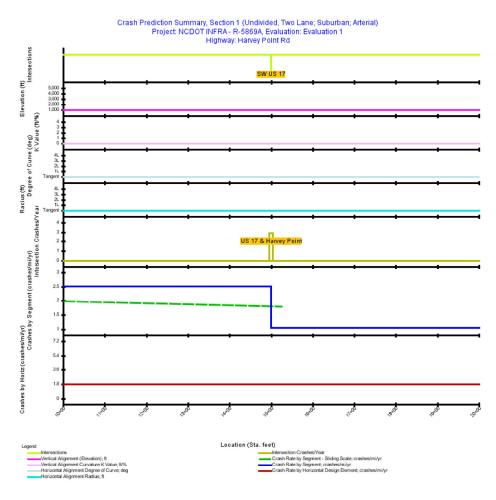


Figure Crash Prediction Summary (Section 1)

									<u> </u>	Гable 1
	Seg. No.	Туре	End Location (Sta. ft)	Length (ft)	Length (mi)	AADT	Number Major Commericial Driveways	Number Minor Commericial Driveways	Number Major Industial/Institutiona	Nu al Indust
- In								1		

Seg. No.	Туре		End Location (Sta. ft)	Length (ft)	Length (mi)	AADT	Number Major Commericial Driveways	Number Minor Commericial Driveways	Number Major Industial/Institutional	Nu Indust
1	3T	10+00.000	15+00.000	500.00	0.0947	2035: 7,100		6	0	
2	3Т	15+00.000	20+00.000	500.00	0.0947	2035: 4,300	0	2	0	

Table 2. Evaluation Intersection (Sect

Inter. No.	Title	Location (Sta. ft)	Major AADT	Minor AADT	Legs	Traffic Control	Intersection Type	Approaches w/Left Turn Lanes	w/ Kigiit	Turn on	Pede Vo (crossi
	US 17 & Harvey Point	15+00.000	2035: 16,300	2035: 7,100	4	Signalized	Four-Legged Signalized	2	0	0	

Table 3. Predicted Highway Crash Rates and Frequencies (Section 1)

Frequencies (Section 1)								
First Year of Analysis	2035							
Last Year of Analysis	2035							
Evaluated Length (mi)	0.1894							
Average Future Road AADT (vpd)	5,700							
Predicted Crashes								
Total Crashes	3.22							
Fatal and Injury Crashes	1.04							
Property-Damage-Only Crashes	2.17							
Percent of Total Predicted Crashes								
Percent Fatal and Injury Crashes (%)	32							
Percent Property-Damage- Only Crashes (%)	68							
Predicted Crash Rate								
Crash Rate (crashes/mi/yr)	16.9879							
FI Crash Rate (crashes/mi/yr)	5.5031							
PDO Crash Rate (crashes/mi/yr)	11.4848							
Predicted Travel Crash Ra	ate							
Total Travel (million veh-mi)	0.39							
Travel Crash Rate (crashes/million veh-mi)	8.16							
Travel FI Crash Rate (crashes/million veh-mi)	2.65							

Travel PDO Crash Rate	5.52
(crashes/million veh-mi)	5.52

Table 4. Predicted Crash Frequencies and Rates by Highway Segment/Intersectic

Segment Number/Intersection Name/Cross Road	Start Location (Sta. ft)	End Location (Sta. ft)	Length (mi)	for	Total Crash	Predicted FI Crash Frequency (crashes/yr)	PDO Crash	Predi (crasl
1	10+00.000	15+00.000	0.0947	0.237	0.2371	0.0598	0.1773	
US 17 & Harvey Point	15+00.000			2.880	2.8803	0.9580	1.9223	
2	15+00.000	20+00.000	0.0947	0.100	0.1000	0.0244	0.0756	
All Segments			0.1894	0.337	0.3371	0.0842	0.2529	
All Intersections				2.880	2.8803	0.9580	1.9223	
Total			0.1894	3.217	3.2174	1.0423	2.1752	

Table 5. Predicted Crash Frequencies and Rates by Horizontal Design Element (Section 1)

Title	Start Location (Sta. ft)	End Location (Sta. ft)	Length (mi)	for	Predicted Total Crash Frequency (crashes/yr)	Predicted FI Crash Frequency (crashes/yr)	PDO Crash Frequency	Predicted Crash Rate (crashes/mi/yr)
Tangent	10+00.000	20+00.000	0.1894	0.337	0.3371	0.0842	0.2529	1.7801

Table 6. Predicted Crash Frequencies by Year (Section 1)

Year	Total Crashes	FI Crashes	Percent FI (%)	PDO Crashes	Percent PDO (%)
2035	3.22	1.04	0.324	2.17	0.676
Total	3.22	1.04	0.324	2.17	0.676
Average	3.22	1.04	0.324	2.17	0.676

Note: Fatal and Injury Crashes and Property Damage Only Crashes do not necessarily sum up to Total Crashes because the distribution of these three crashes had been derived independently.

been derived independently. **Note:** Fatal and Injury Crashes and Property Damage Only Crashes do not necessarily sum up to Total Crashes because the distribution of these three crashes had been derived independently.

Note: Fatal and Injury Crashes and Property Damage Only Crashes do not necessarily sum up to Total Crashes because the distribution of these three crashes had been derived independently.

Table 7. Predicted Five Lane or Fewer Segment Crash Type Distribution (Section 1)

Flores and Tomas	Curah Tura	Fatal a	nd Injury		y Damage Only	Total		
Element Type		Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)	
Highway Segment	Collision with Animal	0.00	0.0	0.00	0.0	0.00	0.0	
Highway Segment	Collision with Bicycle	0.00	0.1	0.00	0.0	0.00	0.1	
Highway Segment	Collision with Fixed Object	0.01	0.4	0.04	1.4	0.06	1.8	
Highway Segment	Collision with Other Object	0.00	0.0	0.00	0.0	0.00	0.0	

Element Tune	Cuach Time	Fatal a	nd Injury		y Damage Only	Т	otal
Element Type	Crash Type	Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)
Highway Segment	Other Single-vehicle Collision	0.01	0.2	0.00	0.0	0.01	0.2
Highway Segment	Collision with Pedestrian	0.00	0.1	0.00	0.0	0.00	0.1
Highway Segment	Total Segment Single Vehicle Crashes	0.03	0.8	0.04	1.4	0.07	2.2
Highway Segment	Angle Collision	0.00	0.1	0.00	0.1	0.01	0.1
Highway Segment	Driveway-related Collision	0.03	0.8	0.08	2.6	0.11	3.4
Highway Segment	Head-on Collision	0.00	0.0	0.00	0.1	0.00	0.1
Highway Segment	Other Multi-vehicle Collision	0.00	0.0	0.00	0.1	0.00	0.1
Highway Segment	Rear-end Collision	0.03	0.8	0.10	3.3	0.13	4.1
Highway Segment	Sideswipe, Opposite Direction Collision	0.00	0.0	0.00	0.1	0.00	0.1
Highway Segment	Sideswipe, Same Direction Collision	0.00	0.0	0.01	0.3	0.01	0.3
Highway Segment	Total Segment Multiple Vehicle Crashes	0.06	1.8	0.21	6.5	0.27	8.3
Highway Segment	Total Highway Segment Crashes	0.08	2.6	0.25	7.9	0.34	10.5
Intersection	Collision with Animal	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Collision with Bicycle	0.04	1.3	0.00	0.0	0.04	1.3
Intersection	Collision with Fixed Object	0.04	1.2	0.12	3.6	0.16	4.8
Intersection	Non-Collision	0.01	0.2	0.01	0.1	0.01	0.4
Intersection	Collision with Other Object	0.00	0.1	0.01	0.3	0.01	0.4
Intersection	Other Single-vehicle Collision	0.00	0.1	0.00	0.1	0.01	0.2
Intersection	Collision with Parked Vehicle	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Collision with Pedestrian	0.01	0.5	0.00	0.0	0.01	0.5
Intersection	Total Intersection Single Vehicle Crashes	0.11	3.4	0.14	4.2	0.24	7.6
Intersection	Angle Collision	0.29	9.1	0.44	13.6	0.73	22.7
Intersection	Head-on Collision	0.04	1.3	0.05	1.7		
Intersection	Other Multi-vehicle Collision	0.05	1.4	0.38	11.7		
Intersection	Rear-end Collision	0.38	11.9	0.86	26.8		
Intersection	Sideswipe	0.08	2.6		1.8		4.4
Intersection	Total Intersection Multiple Vehicle Crashes	0.85	26.4		55.6		
Intersection	Total Intersection Crashes	0.96	29.8	1.92	59.7	2.88	89.5
	Total Crashes	1.04	32.4		67.6		

Note: Fatal and Injury Crashes and Property Damage Only Crashes do not necessarily sum up to Total Crashes because the distribution of these three crashes had been derived independently.

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Interactive Highway Safety Design Model Crash Prediction Evaluation Report

Version v14.0.0 (Sep 26, 2018)

March 1, 2019

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Report Overview

Report Generated: Mar 1, 2019 11:22 AM

Report Template: System: Single Page [System] (mlcpm3, Dec 6, 2018 10:11 AM)

Evaluation Date: Tue Feb 19 13:52:10 CST 2019 **IHSDM Version:** v14.0.0 (Sep 26, 2018) Crash Prediction Module: v9.0.0 (Sep 26, 2018)

User Name: sandbergj Organization Name:

Phone: E-Mail:

Project Title: NCDOT INFRA - R-5869B

Project Comment: Created Tue Feb 19 09:20:19 CST 2019

Project Unit System: U.S. Customary

Highway Title: US 17

Highway Comment: Created Tue Feb 19 09:20:33 CST 2019 Highway Version: 6

Evaluation Title: Evaluation 4

Evaluation Comment: Created Tue Feb 19 13:22:32 CST 2019

Minimum Location: 10+00.000 Maximum Location: 30+00.000

Policy for Superelevation: AASHTO 2011 U.S. Customary

Calibration: HSM Configuration Crash Distribution: HSM Configuration

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Crash Prediction Summary (Section 1)

Type Distribution (Section 1)

Model/CMF: HSM Configuration Empirical-Bayes Analysis: None First Year of Analysis: 2035 Last Year of Analysis: 2035

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Section Types

Section 1 Evaluation

Section: Section 1

Evaluation Start Location: 10+00.000 **Evaluation End Location:** 30+00.000

Area Type: Suburban

Functional Class: Arterial

Type of Alignment: Divided, Multilane Model Category: Urban/Suburban Arterial Calibration Factor: 4D=1.0; 4SG=1.0;

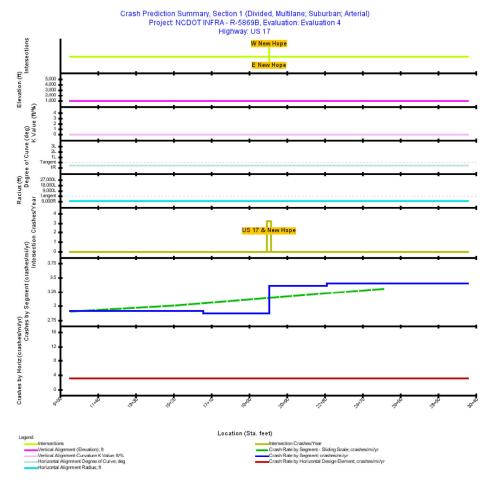


Figure Crash Prediction Summary (Section 1)

										Table
Seg. No.	Туре	Start Location (Sta. ft)	Location	Length (ft)	Length (mi)	AADT	Number Major Commericial Driveways	Number Minor Commericial Driveways	Number Major Industial/Institutional	N Indus

Seg. No.	Туре	Start Location (Sta. ft)	End Location (Sta. ft)	Length (ft)	Length (mi)		Number Major Commericial Driveways	Number Minor Commericial Driveways	Number Major Industial/Institutional	N Indus
1	4D	10+00.000	16+70.000	670.00		2035: 16,300	0	0	0	
2	4D	16+70.000	20+00.000	330.00	0.0625	2035: 16,300	0	0	0	
3	4D	20+00.000	22+90.000	290.00	\cap \cap \subseteq \cap	2035: 18,600	0	0	0	
4	4D	22+90.000	30+00.000	710.00	0.1345	2035: 18,600	0	0	0	

Table 2. Evaluation Intersection (Section

Inter. No.	Title	Location (Sta. ft)	Major AADT	Minor AADT	Legs	Traffic Control	Intersection Type	Approaches w/Left Turn Lanes	w/Right	Turn on	Pedes Volu (crossing
	US 17 & New Hope	20+00.000	2035: 18,600	2035: 3,400	4	Signalized	Four-Legged Signalized	3	0	0	

Table 3. Predicted Highway Crash Rates and Frequencies (Section 1)

riequencies (Section 1)	
First Year of Analysis	2035
Last Year of Analysis	2035
Evaluated Length (mi)	0.3788
Average Future Road AADT (vpd)	17,450
Predicted Crashes	
Total Crashes	4.40
Fatal and Injury Crashes	1.42
Property-Damage-Only Crashes	2.98
Percent of Total Predicted Co	rashes
Percent Fatal and Injury Crashes (%)	32
Percent Property-Damage- Only Crashes (%)	68
Predicted Crash Rate	
Crash Rate (crashes/mi/yr)	11.6188
FI Crash Rate (crashes/mi/yr)	3.7380
PDO Crash Rate (crashes/mi/yr)	7.8808
Predicted Travel Crash Ra	ate
Total Travel (million veh-mi)	2.41

Travel Crash Rate (crashes/million veh-mi)	1.82
Travel FI Crash Rate (crashes/million veh-mi)	0.59
Travel PDO Crash Rate (crashes/million veh-mi)	1.24

Table 4. Predicted Crash Frequencies and Rates by Highway Segment/Intersection

Segment Number/Intersection Name/Cross Road	Start Location (Sta. ft)	End Location (Sta. ft)	Length (mi)	for	Predicted Total Crash Frequency (crashes/yr)	Predicted FI Crash Frequency (crashes/yr)	PDO Crash Frequency	Predi (crasl
1	10+00.000	16+70.000	0.1269	0.369	0.3691	0.1023	0.2668	
2	16+70.000	20+00.000	0.0625	0.179	0.1795	0.0498	0.1298	
US 17 & New Hope	20+00.000			3.211	3.2108	1.0855	2.1252	
3	20+00.000	22+90.000	0.0549	0.184	0.1844	0.0513	0.1332	
4	22+90.000	30+00.000	0.1345	0.457	0.4573	0.1271	0.3302	
All Segments			0.3788	1.190	1.1903	0.3304	0.8599	
All Intersections				3.211	3.2108	1.0855	2.1252	
Total			0.3788	4.401	4.4011	1.4159	2.9852	

Table 5. Predicted Crash Frequencies and Rates by Horizontal Design Element (Section 1)

Title	Start Location (Sta. ft)	End Location (Sta. ft)	Length (mi)	for	Predicted Total Crash Frequency (crashes/yr)	Predicted FI Crash Frequency (crashes/yr)	Predicted PDO Crash Frequency (crashes/yr)	Predicted Crash Rate (crashes/mi/yr)
Simple Curve 1	10+00.000	30+00.000	0.3788	1.190	1.1903	0.3304	0.8599	3.1424

Table 6. Predicted Crash Frequencies by Year (Section 1)

Year	Total Crashes	FI Crashes	Percent FI (%)	PDO Crashes	Percent PDO (%)
2035	4.40	1.42	0.322	2.98	0.678
Total	4.40	1.42	0.322	2.98	0.678
Average	4.40	1.42	0.322	2.98	0.678

Note: Fatal and Injury Crashes and Property Damage Only Crashes do not necessarily sum up to Total Crashes because the distribution of these three crashes had

been derived independently.

Note: Fatal and Injury Crashes and Property Damage Only Crashes do not necessarily sum up to Total Crashes because the distribution of these three crashes had been derived independently.

Note: Fatal and Injury Crashes and Property Damage Only Crashes do not necessarily sum up to Total Crashes because the distribution of these three crashes had

been derived independently.

Table 7. Predicted Five Lane or Fewer Segment Crash Type Distribution (Section 1)

Flowent Type	Cuach Time	Fatal a	nd Injury		y Damage Only	Т	otal
Element Type	Crash Type	Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)
Highway Segment	Collision with Animal	0.00	0.0	0.01	0.3	0.01	0.3
Highway Segment	Collision with Bicycle	0.01	0.1	0.00	0.0	0.01	0.1
Highway Segment	Collision with Fixed Object	0.02	0.4	0.15	3.5	0.17	4.0
Highway Segment	Collision with Other Object	0.00	0.0	0.00	0.1	0.00	0.1
Highway Segment	Other Single-vehicle Collision	0.02	0.4	0.02	0.5	0.04	0.9
Highway Segment	Collision with Pedestrian	0.02	0.5	0.00	0.0	0.02	0.5
Highway Segment	Total Segment Single Vehicle Crashes	0.07	1.5	0.19	4.3	0.26	5.8
Highway Segment	Angle Collision	0.01	0.2	0.02	0.5	0.04	0.8
Highway Segment	Driveway-related Collision	0.00	0.0	0.00	0.0	0.00	0.0
Highway Segment	Head-on Collision	0.01	0.1	0.01	0.1	0.01	0.2
Highway Segment	Other Multi-vehicle Collision	0.01	0.3	0.05	1.1	0.06	1.4
Highway Segment	Rear-end Collision	0.22	5.0	0.44	10.1	0.66	15.1
Highway Segment	Sideswipe, Opposite Direction Collision	0.00	0.1	0.00	0.0	0.00	0.1
Highway Segment	Sideswipe, Same Direction Collision	0.01	0.3	0.15	3.4	0.16	3.7
Highway Segment	Total Segment Multiple Vehicle Crashes	0.27	6.0	0.67	15.2	0.93	21.2
Highway Segment	Total Highway Segment Crashes	0.33	7.5	0.86	19.5		27.0
Intersection	Collision with Animal	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Collision with Bicycle	0.05	1.1	0.00	0.0	0.05	1.1
Intersection	Collision with Fixed Object	0.04	0.9	0.12	2.8	0.16	3.7
Intersection	Non-Collision	0.01	0.2	0.01	0.1		0.3
Intersection	Collision with Other Object	0.00	0.1	0.01	0.2	0.01	0.3
Intersection	Other Single-vehicle Collision	0.00	0.0	0.00	0.1	0.01	0.1
Intersection	Collision with Parked Vehicle	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Collision with Pedestrian	0.01	0.3	0.00	0.0	0.01	0.3
Intersection	Total Intersection Single Vehicle Crashes	0.11	2.5	0.14	3.2	0.25	5.7
Intersection	Angle Collision	0.34	7.7	0.48	11.0	0.82	18.7
Intersection	Head-on Collision	0.05	1.1	0.06	1.4	0.11	2.4
Intersection	Other Multi-vehicle Collision	0.05	1.2	0.42	9.5	0.47	10.7
Intersection	Rear-end Collision	0.44	10.0	0.96	21.8	1.40	31.7
Intersection	Sideswipe	0.10	2.2	0.06	1.4		
Intersection	Total Intersection Multiple Vehicle Crashes	0.97	22.2	1.98	45.1		
Intersection	Total Intersection Crashes	1.09	24.7	2.12	48.3	3.21	73.0
	Total Crashes	1.42	32.2		67.8		

Note: Fatal and Injury Crashes and Property Damage Only Crashes do not necessarily sum up to Total Crashes because the distribution of these three crashes had been derived independently.

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Interactive Highway Safety Design Model Crash Prediction Evaluation Report

Version v14.0.0 (Sep 26, 2018)

March 1, 2019

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Report Overview

Report Generated: Mar 1, 2019 11:21 AM

Report Template: System: Single Page [System] (mlcpm3, Dec 6, 2018 10:11 AM)

Evaluation Date: Tue Feb 19 13:52:46 CST 2019 **IHSDM Version:** v14.0.0 (Sep 26, 2018) Crash Prediction Module: v9.0.0 (Sep 26, 2018)

User Name: sandbergj Organization Name:

Phone: E-Mail:

Project Title: NCDOT INFRA - R-5869B

Project Comment: Created Tue Feb 19 09:20:19 CST 2019

Project Unit System: U.S. Customary

Highway Title: New Hope

Highway Comment: Created Tue Feb 19 13:11:34 CST 2019 **Highway Version:** 3

Evaluation Title: Evaluation 1

Evaluation Comment: Created Tue Feb 19 13:52:27 CST 2019

Minimum Location: 10+00.000 Maximum Location: 20+00.000

Policy for Superelevation: AASHTO 2011 U.S. Customary

Calibration: HSM Configuration Crash Distribution: HSM Configuration

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Crash Prediction Summary (Section 1)

Type Distribution (Section 1)

Model/CMF: HSM Configuration Empirical-Bayes Analysis: None First Year of Analysis: 2035 Last Year of Analysis: 2035

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Section Types

Section 1 Evaluation

Section: Section 1

Evaluation Start Location: 10+00.000 **Evaluation End Location:** 20+00.000

Area Type: Suburban

Functional Class: Arterial

Type of Alignment: Undivided, Two Lane Model Category: Urban/Suburban Arterial Calibration Factor: 2U=1.0; 4SG=1.0;

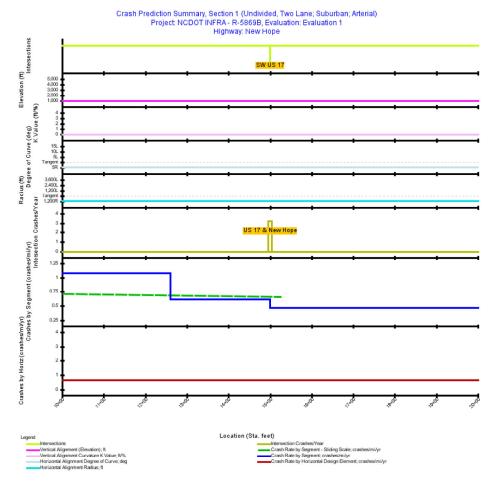


Figure Crash Prediction Summary (Section 1)

									-	Γable 1.
Se N	Туре	Start Location (Sta. ft)	End Location (Sta. ft)	Length (ft)	Length (mi)	AADT	Number Major Commericial Driveways	Number Minor Commericial Driveways	Number Major Industial/Institutiona	Nu IIndust

Seg. No.	Туре	Start Location (Sta. ft)	End Location (Sta. ft)	Length (ft)	Length (mi)	AADT	Number Major Commericial Driveways	Number Minor Commericial Driveways	Number Major Industial/Institutional	Nu Indust
1	2U	10+00.000	12+60.000	260.00		2035: 3,400	0	2	0	
2	2U	12+60.000	15+00.000	240.00	0.0454	2035: 3,400	0	0	0	
3	2U	15+00.000	20+00.000	500.00	0.0947	2035: 2,017	0	1	0	

Table 2. Evaluation Intersection (Section

Inter. No.	Title	Location (Sta. ft)	Major AADT	Minor AADT	Legs	Traffic Control	Intersection Type	Approaches w/Left Turn Lanes	w/ Kigiit	Turn on	Pedes Volu (crossing
II I	US 17 & New Hope	15+00.000	2035: 18,600	2035: 3,400	4	Signalized	Four-Legged Signalized	3	0	0	

Table 3. Predicted Highway Crash Rates and Frequencies (Section 1)

rrequencies (Section 1)	
First Year of Analysis	2035
Last Year of Analysis	2035
Evaluated Length (mi)	0.1894
Average Future Road AADT (vpd)	2,708
Predicted Crashes	
Total Crashes	3.34
Fatal and Injury Crashes	1.13
Property-Damage-Only Crashes	2.21
Percent of Total Predicted C	rashes
Percent Fatal and Injury Crashes (%)	34
Percent Property-Damage- Only Crashes (%)	66
Predicted Crash Rate	
Crash Rate (crashes/mi/yr)	17.6120
FI Crash Rate (crashes/mi/yr)	5.9491
PDO Crash Rate (crashes/mi/yr)	11.6629
Predicted Travel Crash R	ate
Total Travel (million veh-mi)	0.19
Travel Crash Rate (crashes/million veh-mi)	17.82

Travel FI Crash Rate (crashes/million veh-mi)	6.02
Travel PDO Crash Rate (crashes/million veh-mi)	11.80

Table 4. Predicted Crash Frequencies and Rates by Highway Segment/Intersectic

Segment Number/Intersection Name/Cross Road	Start Location (Sta. ft)	End Location (Sta. ft)	Length (mi)	for	Total Crash Frequency	Predicted FI Crash Frequency (crashes/yr)	Predicted PDO Crash Frequency (crashes/yr)	Predi (crasl
1	10+00.000	12+60.000	0.0492	0.053	0.0532	0.0171	0.0361	
2	12+60.000	15+00.000	0.0455	0.028	0.0280	0.0088	0.0192	
US 17 & New Hope	15+00.000			3.211	3.2108	1.0855	2.1252	
3	15+00.000	20+00.000	0.0947	0.044	0.0437	0.0153	0.0284	
All Segments			0.1894	0.125	0.1249	0.0412	0.0836	
All Intersections				3.211	3.2108	1.0855	2.1252	
Total			0.1894	3.336	3.3356	1.1267	2.2089	

Table 5. Predicted Crash Frequencies and Rates by Horizontal Design Element (Section 1)

Title	Start Location (Sta. ft)	End Location (Sta. ft)	Length (mi)	for	Predicted Total Crash Frequency (crashes/yr)	Predicted FI Crash Frequency (crashes/yr)	Predicted PDO Crash Frequency (crashes/yr)	Predicted Crash Rate (crashes/mi/yr)
Simple Curve	I	20+00.000	0.1894	0.125	0.1249	0.0412	0.0836	0.6592

Table 6. Predicted Crash Frequencies by Year (Section 1)

			•		
Year	Total Crashes	FI Crashes	Percent FI (%)	PDO Crashes	Percent PDO (%)
2035	3.34	1.13	0.338	2.21	0.662
Total	3.34	1.13	0.338	2.21	0.662
Average	3.34	1.13	0.338	2.21	0.662

Note: Fatal and Injury Crashes and Property Damage Only Crashes do not necessarily sum up to Total Crashes because the distribution of these three crashes had been derived independently.

Note: Fatal and Injury Crashes and Property Damage Only Crashes do not necessarily sum up to Total Crashes because the distribution of these three crashes had been derived independently.

Note: Fatal and Injury Crashes and Property Damage Only Crashes do not necessarily sum up to Total Crashes because the distribution of these three crashes had been derived independently.

Table 7. Predicted Five Lane or Fewer Segment Crash Type Distribution (Section 1)

Element Tyre	Crach Tymo	Fatal and Injury			y Damage Only	Total	
Element Type		Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)
Highway Segment	Collision with Animal	0.00	0.0	0.00	0.1	0.00	0.1
	Collision with Bicycle	0.00	0.0	0.00	0.0	0.00	0.0

	O I. T	Fatal a	nd Injury		y Damage Only	Т	otal
Element Type	Crash Type	Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)
Highway Segment							
Highway Segment	Collision with Fixed Object	0.02	0.5	0.03	1.0	0.05	1.5
Highway Segment	Collision with Other Object	0.00	0.0	0.00	0.0	0.00	0.0
Highway Segment	Other Single-vehicle Collision	0.01	0.2	0.01	0.2	0.01	0.4
Highway Segment	Collision with Pedestrian	0.00	0.0	0.00	0.0	0.00	0.0
Highway Segment	Total Segment Single Vehicle Crashes	0.02	0.7	0.04	1.3	0.07	2.0
Highway Segment	Angle Collision	0.00	0.0	0.00	0.0	0.00	0.1
Highway Segment	Driveway-related Collision	0.01	0.3	0.02	0.6	0.03	0.9
Highway Segment	Head-on Collision	0.00	0.0	0.00	0.0	0.00	0.0
Highway Segment	Other Multi-vehicle Collision	0.00	0.0	0.00	0.0	0.00	0.0
Highway Segment	Rear-end Collision	0.01	0.2	0.01	0.5	0.02	0.6
Highway Segment	Sideswipe, Opposite Direction Collision	0.00	0.0	0.00	0.0	0.00	0.1
Highway Segment	Sideswipe, Same Direction Collision	0.00	0.0	0.00	0.0	0.00	0.0
Highway Segment	Total Segment Multiple Vehicle Crashes	0.02	0.5	0.04	1.2	0.06	1.7
Highway Segment	Total Highway Segment Crashes	0.04	1.2	0.08	2.5	0.12	3.7
Intersection	Collision with Animal	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Collision with Bicycle	0.05	1.4	0.00	0.0	0.05	1.4
Intersection	Collision with Fixed Object	0.04	1.1	0.12	3.7	0.16	4.8
Intersection	Non-Collision	0.01	0.2	0.01	0.1	0.01	0.4
Intersection	Collision with Other Object	0.00	0.1	0.01	0.3	0.01	0.4
Intersection	Other Single-vehicle Collision	0.00	0.1	0.00	0.1	0.01	0.2
Intersection	Collision with Parked Vehicle	0.00	0.0	0.00	0.0	0.00	0.0
Intersection	Collision with Pedestrian	0.01	0.4	0.00	0.0	0.01	0.4
Intersection	Total Intersection Single Vehicle Crashes	0.11	3.3	0.14	4.3	0.25	7.6
Intersection	Angle Collision	0.34	10.1	0.48	14.5	0.82	24.7
Intersection	Head-on Collision	0.05	1.4	0.06	1.8	0.11	3.2
Intersection	Other Multi-vehicle Collision	0.05	1.6	0.42	12.5	0.47	14.2
Intersection	Rear-end Collision	0.44	13.2	0.96	28.7	1.40	41.9
Intersection	Sideswipe	0.10	2.9	0.06	1.9	0.16	4.8
Intersection	Total Intersection Multiple Vehicle Crashes	0.97	29.2	1.98	59.5	2.96	88.7
Intersection	Total Intersection Crashes	1.09	32.5	2.12	63.7	3.21	96.3
	Total Crashes	1.13	33.8	2.21	66.2	3.34	100.0

Note: Fatal and Injury Crashes and Property Damage Only Crashes do not necessarily sum up to Total Crashes because the distribution of these three crashes had

been derived independently.

[Top]

Estimated number of crashes during Study Period, crashes:									
Project H129200-BA (I-95 Widening)			Out	put Summ	ary				
Analyst: JUS Date: 371/2019 Area type: Urban	General Information								
First year of analysis:	Project description:	Project H129200-E	BA (I-95 Wideni	ng) - Existir	ng Conditio	ns			
Crash bata bescription	Analyst:	JJS	Date:	3/1/2019		Area type:	l	Jrban	
Segment crash data available? No First year of crash data Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data: Project	First year of analysis:	2035							
Freeway segments Segment crash data available? No First year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Segment crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data Project-level crash data available? No Last year of crash data Project-level crash data available? No Last year of crash data Project-l	Last year of analysis:	2035							
Project-level crash data available? No Last year of crash data:	Crash Data Descript	tion							
Ramp segments Segment crash data available? No First year of crash data: Project-level crash data available? No Last year of crash data: Project-level crash data available? No Last year of crash data:	Freeway segments	Segment crash da	ta available?		No	First year o	of crash data	:	
Ramp terminals Segment crash data available? No Last year of crash data Ramp terminals Segment crash data available? No First year of crash data Ramp terminals Segment crash data available? No Segment crash data Ramp terminals Segment crash data available? No Last year of crash data Ramp terminals Segment crash data available? No Sites Segment crash data Ramp terminals Ramp terminal		Project-level crash	data available	?	No				
Ramp terminals	Ramp segments	Segment crash da	ta available?		No	First year o	of crash data	:	
Project-level crash data available?		Project-level crash	ı data available'	?	No	Last year o	f crash data		
Total K A B C PDC	Ramp terminals	Segment crash da	ta available?		No	First year o	of crash data	:	
Total K A B C PDC			ı data available'	?	No	Last year o	f crash data		
Estimated number of crashes during Study Period, crashes:									
Estimated average crash freq, during Study Period, crashesyr: 200.5 1.0 2.8 14.7 39.0 14	Crashes for Entire F	acility		Total	K	Α		С	PDO
Nbr. Sites Total K	Estimated number of crash	es during Study Period,	crashes:						143.0
Preeway segments, crashes: 3 200.5 1.0 2.8 14.7 39.0 14	Estimated average crash fr	eq. during Study Period,	crashes/yr:	200.5	1.0	2.8	14.7	39.0	143.0
Ramp segments, crashes:	Crashes by Facility	Component	Nbr. Sites	Total	K	Α	В	С	PDO
O	Freeway segments, o	rashes:	3	200.5					143.0
Crashes for Entire Facility by Year Year Total K A B C PDC	Ramp segments, cras	shes:							0.0
2035 200.5 1.0 2.8 14.7 39.0 14			-			0.0			0.0
2036	Crashes for Entire F	acility by Year							PDO
2037	Estimated number of	crashes during		200.5	1.0	2.8	14.7	39.0	143.0
2038	the Study Period, cra-	shes:	2036						
2039			2037						
2040			2038						
2041									
2042			2040						
2043									
2044									
2045									
2046			2044						
2047			2045						
2048									
2049									
2050			2048						
2051 2052									
2052									
2053			2051						
2054									
2055 2056 2057 2058					·				
Distribution of Crashes for Entire Facility Crash Type Crash Type Category Estimated Number of Crashes During the Study Period Total K A B C PDC					-				
2057 2058									
Distribution of Crashes for Entire Facility Crash Type Crash Type Category Estimated Number of Crashes During the Study Period Total K A B C PDC									
Crash Type Crash Type Category Estimated Number of Crashes During the Study Period Total K A B C PDC									
Crash Type Crash Type Category Estimated Number of Crashes During the Study Period Total K A B C PDC	B								
Nultiple vehicle Head-on crashes: 0.6 0.0 0.0 0.1 0.3	Distribution of Cras	nes for Entire Faci	iity	E-41	tad Norma		aa Duwlee : 1	ha Ctarda	Davia -
Head-on crashes: 0.6 0.0 0.1 0.3	Crash Type	Crash Type	Category						
Right-angle crashes: 3.8 0.0 0.1 0.4 1.0 Rear-end crashes: 123.5 0.7 1.8 9.6 25.5 Sideswipe crashes: 42.2 0.2 0.4 2.3 6.2 3 Other multiple-vehicle crashes: 4.5 0.0 0.1 0.4 1.0 Total multiple-vehicle crashes: 174.7 0.9 2.5 12.8 34.1 12 Single vehicle Crashes with animal: 0.4 0.0 0.0 0.0 0.0 Crashes with fixed object: 18.6 0.1 0.3 1.4 3.5 1 Crashes with other object: 3.0 0.0 0.0 0.1 0.3 Crashes with parked vehicle: 0.4 0.0 0.0 0.0 0.1 Other single-vehicle crashes 3.5 0.0 0.1 0.4 1.0	Multiple vehicle	Hood on orospasi							0.2
Rear-end crashes: 123.5 0.7 1.8 9.6 25.5 8 Sideswipe crashes: 42.2 0.2 0.4 2.3 6.2 3 Other multiple-vehicle crashes: 4.5 0.0 0.1 0.4 1.0 Total multiple-vehicle crashes: 174.7 0.9 2.5 12.8 34.1 12 Crashes with favid object: 18.6 0.1 0.3 1.4 3.5 1 Crashes with the object: 3.0 0.0 0.0 0.1 0.3 Crashes with parked vehicle: 0.4 0.0 0.0 0.0 0.1 Other single-vehicle crashes 3.5 0.0 0.1 0.4 1.0	wuntpie veriicie		20.						2.2
Sideswipe crashes:									85.9
Other multiple-vehicle crashes: 4.5 0.0 0.1 0.4 1.0									33.1
Total multiple-vehicle crashes: 174.7 0.9 2.5 12.8 34.1 12									3.0
Crashes with animal: 0.4 0.0 0.0 0.0 0.0									124.5
Crashes with fixed object: 18.6 0.1 0.3 1.4 3.5 1 Crashes with other object: 3.0 0.0 0.0 0.1 0.3 Crashes with parked vehicle: 0.4 0.0 0.0 0.0 0.1 Other single-vehicle crashes 3.5 0.0 0.1 0.4 1.0	Single vehicle								0.4
Crashes with other object: 3.0 0.0 0.0 0.1 0.3 Crashes with parked vehicle: 0.4 0.0 0.0 0.0 0.1 Other single-vehicle crashes 3.5 0.0 0.1 0.4 1.0	onigie verlicie								13.3
Crashes with parked vehicle: 0.4 0.0 0.0 0.0 0.1 Other single-vehicle crashes 3.5 0.0 0.1 0.4 1.0									2.6
Other single-vehicle crashes 3.5 0.0 0.1 0.4 1.0									0.3
									1.9
									18.5
									143.0

Evaluation Site Summary											
General Information											
Project des		Project H1	29200-BA (I-95 Wider	ing) - Evieti	na Conditio	ns					
Analyst:	scription.	JJS	Date:	3/1/2019	ng Conditio	Area type:	Urban				
First year o	of analysis	2035	Total length of freewa		for Study I		4.680				
Last year o		2035	Total length of neewe	ly ocginicitie	ioi olaay i	crioa (iiii).	4.000				
Site Descr											
Freeway S											
Number	Lanes	Study Period	Study Period Descrip	tion							
		Length (mi)									
1	4	2.630	74 Gore to Caton Gore								
2	4	1.760	Caton Gore to Carthage G	ore							
3	4	0.290	Gore to Gore								
4	0	0.000	0								
5	0		0								
6	0		0								
7	0		0								
8	0	0.000	0			1					
9	0		0								
10 11	0	0.000	0 0								
11	0		0								
12	0		0								
14	0		0								
15	0	0.000	0								
16	Ö		0								
17	0	0.000	0								
18	0	0.000	0								
19	0	0.000	0								
20	0	0.000	0								
Ramp Seg	ments										
	Study Peri			Number	Study Peri						
Number	Study Perion Description				Description						
Number 1	Study Perion Description			21	Description 0						
Number 1 2	Study Perion Description 0			21 22	Description 0 0						
Number 1 2 3	Study Perion Description 0 0			21 22 23	Description 0 0 0						
Number 1 2 3 4	Study Perion Description 0 0 0 0			21 22 23 24	Description 0 0 0 0						
Number 1 2 3 4 5	Study Period Description 0 0 0 0			21 22 23 24 25	Description 0 0 0						
Number 1 2 3 4 5 6	Study Period Description 0 0 0			21 22 23 24	Description 0 0 0 0 0 0 0						
Number 1 2 3 4 5 6 7	Study Perion Description 0 0 0 0 0 0 0			21 22 23 24 25 26	Description 0 0 0 0 0 0 0 0						
Number 1 2 3 4 5 6 7 8	Study Perion Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27	Description 0 0 0 0 0 0 0 0 0 0 0 0 0						
Number 1 2 3 4 5 6 7 8 9 10	Study Perion Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						
Number 1 2 3 4 5 6 7 8 9 10 11	Study Perin Description 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						
Number 1 2 3 4 5 6 7 8 9 10 11 12	Study Perin Description 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31 32	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						
Number 1 2 3 4 5 6 7 8 9 10 11 12 13	Study Perion Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31 32 33	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14	Study Perion Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31 32 33 34	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	Study Periode St			21 22 23 24 25 26 27 28 29 30 31 32 33 34 35	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	Study Period Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						
Number 1	Study Period Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	Study Perivoleton Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						
Number 1	Study Period Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21 22 23 24 25 26 27 28 30 31 32 33 34 35 36 37 38	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	Study Perivoleton Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1		21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	Study Periode St	rminals	Study Period Descrip	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 18 19 20 Crossroac Number	Study Period Description 0	minals Control		21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 Crossroac Number	Study Periodes Periodes Study Periodes Per	rminals Control	0	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 Crossroac Number	Study Period Description 0	minals Control		21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						
Number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 Crossroac Number	Study Periodescription Study	rminals Control 0	0	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	Description 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						

			Out	nut Cumm	on.				
General Information	n .		Out	tput Summ	агу				
	-	20200 BA	I OF Widoni	na\ Drane	a a d				
Project description:	JJS	29200-DA (I-95 Wideni	3/1/2019	seu	Area tunai		Lishon	
Analyst:			Date:	3/1/2019		Area type:		Urban	
First year of analysis									
Last year of analysis									
Crash Data Descrip						F: .			
Freeway segments		Segment crash data available?			No	First year o			
			ta available	?	No	Last year o			
Ramp segments		rash data a			No	First year of crash data:			
			ta available	?	No		f crash data		
Ramp terminals	Segment of	rash data a	available?		No	First year o	of crash data	a:	
	Project-level cras			?	No	Last year o	f crash data	a:	
Estimated Crash St	tatistics								
Crashes for Entire	Facility			Total	K	Α	В	С	PDO
Estimated number of cras	hes during Stud	y Period, cras	hes:	133.4	1.1	2.9	15.2	24.1	90.1
Estimated average crash				133.4	1.1	2.9	15.2	24.1	90.1
Crashes by Facility			Nbr. Sites	Total	K	Α	В	С	PDO
Freeway segments,		-	3	133.4	1.1	2.9	15.2	24.1	90.1
			0	0.0	0.0	0.0	0.0	0.0	0.0
	Ramp segments, crashes: Crossroad ramp terminals, crashes:			0.0	0.0	0.0	0.0	0.0	0.0
			0 Year	Total	K	A 0.0	B	C	PDO
Crashes for Entire							-		
Estimated number of		ing	2035	133.4	1.1	2.9	15.2	24.1	90.1
the Study Period, cra	asnes:		2036						
			2037						
			2038						
			2039						
			2040						
			2041						
			2042						
			2043						
			2044						
			2045						
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			2052						
			2053						
			2053						
			2055						
			2055						
			2057 2058						
Di-4-16 - 41 4 2	-b f F :	F 10'							
Distribution of Cras	snes for Ent	ire Facility		F-4'			Don't	41 04	Dealed
Crash Type	Crasi	h Type Cat	egory			er of Crash			
			J.,	Total	K	Α	В	С	PDO
Multiple vehicle	Head-on c			0.4	0.0	0.0	0.1	0.2	0.1
	Right-angle			2.3	0.0	0.1	0.4	0.6	1.2
	Rear-end of			72.7	0.7	1.7	9.1	14.5	46.7
	Sideswipe	crashes:		24.2	0.2	0.4	2.2	3.5	18.0
	Other mult	iple-vehicle	crashes:	2.7	0.0	0.1	0.4	0.6	1.6
	Total mu	Itiple-vehic	e crashes:	102.3	0.9	2.3	12.2	19.3	67.7
Single vehicle				0.5	0.0	0.0	0.0	0.0	0.5
Crashes with fixed ob		ith fixed oh	ject:	22.3	0.2	0.4	2.2	3.5	16.1
		ith other ob		3.6	0.0	0.0	0.2	0.2	3.1
	Crashes w								
				0.5	0.0	0.0	0.0	0.1	0.3
	Crashes w	ith parked	vehicle:						0.3
	Crashes w Other sing	ith parked v le-vehicle c	vehicle: rashes	4.2	0.0	0.1	0.6	1.0	2.4
	Crashes w Other sing	ith parked	vehicle: rashes crashes:						

			Evaluat	tion Site S	ımmarıı			
General In	formation		Evalua	tion site s	ullillary			
Project des		Project H1	29200-BA (I-95 Wideni	ing) - Pronc	head			
Analyst:	сприоп.	JJS		3/1/2019	seu	Aroa tupo:	Urban	
First year o	f analysis:	2035	Total length of freewa		for Study [Area type:	4.680	
Last year o		2035	Total length of freewa	y segment	i ioi oluuy i	erioù (iiii).	4.000	
Site Descr		2000						
Freeway S								
Number	Lanes	Charles Desired	Study Boried Descript	ion		1		
Nullibel	Lailes	Length (mi)	Study Period Descript	1011				
1	8	2.630	74 Gore to Caton Gore					
2	8	1.760	Caton Gore to Carthage Go	iro.				
3	8	0.290	Gore to Gore	10				
4	0		0					
5	0	0.000	0					
6	0		0					
7	0	0.000	0					
8	0		0					
9	0	0.000	0					
10	0	0.000	0					
11	0		0					
12	0	0.000	0					
13	0		0					
14	0	0.000	0					
15	0		0					
16	0	0.000	0					
17	Ö	0.000	0					
18	0	0.000	0					
19	0	0.000	0					
20	Ö	0.000	0					
Ramp Seg	ments		1			ı		
	Study Perio	od		Number	Study Peri	od		
	Description				Description	n		
1	0			21	0			
2	0			22	0			
	0			23	0			
	0			24	0			
	0			25	0			
	0			26	0			
	0			27	0			
	0			28	0			
	0			29	0			
	0		1	30	0			
	0		1	31	0			
	0		1	32	0			
	0		1	33	0			
	0		1	34	0			
	0		İ	35	0			
	0		1	36	0			
	0		1	37	0			
	0		1	38	0			
20	0		1	39 40	0 0			
	∪ I Ramp Tei	rminala	<u> </u>	40	V			
Number	Config.	Control	Study Period Descript	ion				
				1011				
1	0	0	0					
2	0	0	0					
3	0	0	0					
4	0	0	0					
5 6	0	0	0					
n								

_									
			Out	put Summ	ary				
General Information									
Project description:	Project I-587	9 (I-95 &	Carthage Int	erchange I	mproveme	nt) - Existing	g Conditions		
Analyst:	JJS		Date:	3/1/2019		Area type:	l	Jrban	
First year of analysis:	2035								
Last year of analysis:	2035								
Crash Data Descript	ion								
Freeway segments	Segment cra	sh data a	available?		No	First year o	of crash data	:	
	Project-level	crash da	ta available'	?	No	Last year o	f crash data	:	
Ramp segments	Segment cra	sh data a	available?		No	First year o	of crash data	:	
	Project-level	crash da	ita available'	?	No	Last year o	f crash data	:	
Ramp terminals	Segment cra	sh data a	available?		No	First year o	of crash data	:	
	Project-level	crash da	ita available'	?	No	Last year o	f crash data		
Estimated Crash Sta	tistics								
Crashes for Entire F	acility			Total	K	Α	В	С	PDO
Estimated number of crash	es during Study F	eriod, cras	hes:	3.3	0.0	0.0	0.1	0.6	2.5
Estimated average crash fr	eq. during Study I	Period, cra	shes/yr:	3.3	0.0	0.0	0.1	0.6	2.5
Crashes by Facility	Component		Nbr. Sites	Total	K	Α	В	С	PDO
Freeway segments, c			0	0.0	0.0	0.0	0.0	0.0	0.0
Ramp segments, cras			0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp term		:	2	3.3	0.0	0.0	0.1	0.6	2.5
Crashes for Entire F	acility by Yea	ar	Year	Total	K	Α	В	С	PDO
Estimated number of			2035	3.3	0.0	0.0	0.1	0.6	2.5
the Study Period, cras		-	2036						
-			2037						
			2038						
			2039						
			2040						
			2041						
			2042						
			2043						
			2044						
			2045						
			2046						
			2047						
			2048						
			2049						
			2050						
			2051						
			2052						
			2053						
			2054						
			2055						
			2056						
			2057						
Distribution of O	has fan Endi-	Faail'+	2058						
Distribution of Crasi	ies for Entire	racility	-	Entime	tod Nursk	or of Crook	es During t	ho Ctud	Pariod
Crash Type	Crash 7	Type Cat	egory	Total	K K	er of Crash	B Buring t	ne Study I	PDO
Multiple vehicle	Head-on cras	chae:		0.0	0.0	0.0	0.0	0.0	0.0
ividitiple vellide	Right-angle			1.3	0.0	0.0	0.0	0.0	0.0
	Rear-end cra			1.3	0.0	0.0	0.1	0.3	0.9
	Sideswipe cr			0.2	0.0	0.0	0.0	0.2	0.9
	Other multipl		crashes.	0.2	0.0	0.0	0.0	0.0	0.0
			le crashes:	2.8	0.0	0.0	0.0	0.6	2.1
Single vehicle	Crashes with		ic Grashes.	0.0	0.0	0.0	0.1	0.0	0.0
onigie verilcie	Crashes with		iect:	0.0	0.0	0.0	0.0	0.0	0.0
	Crashes with			0.0	0.0	0.0	0.0	0.1	0.0
	Crashes with			0.0	0.0		0.0	0.0	0.0
	Other single-			0.0	0.0		0.0	0.0	0.0
	Total single			0.1	0.0	0.0	0.0	0.0	0.0
		otal cras		3.3	0.0		0.0	0.6	2.5
	- 1	otal Glas	100.	5.5	0.0	0.0	0.1	0.0	2.0

				Evalua	tion Site S	ummarv			
General In	formation			E	tion c	ulillia. y			
Project des		Project I-58	379 (I-95 &	Carthage In	terchange	Improveme	nt) - Existin	Condition	S
Analyst:		JJS		Date:	3/1/2019		Area type:		Urban
First year o		2035	Total lengt	h of freewa	y segments	s for Study I	Period (mi):	0.000	
Last year o	f analysis:	2035							
Site Descr									
Freeway S					_				
Number	Lanes		Study Peri	od Descript	tion				
1	0	Length (mi)					ļ		
2	0		0 0						
3	0		0						
4	0		0						
5	0		0						
6	0		0						
7	0		0						
8	0		0						
9	0		0						
10	0		0						
11	0		0						
12 13	0		0						
13 14	0		0						
15	0		0						
16	0		0						
17	Ö		0						
18	0		0						
19	0		0						
20	0	0.000	0						
Ramp Seg									
Number	Study Period Description				Number	Study Peri Description			
1	0 Description	1			21	0	n		
	0				22	0			
	0				23	0			
4	0				24	0			
	0				25	0			
	0				26	0			
	0				27	0			
	0				28 29	0			
	0				30	0			
	0				31	0			
	0				32	0			
	0				33	0			
	0				34	0			
	0				35	0			
	0				36	0			
	0				37	0			
	0				38	0			
19 20	0				39 40	0			
Crossroad	-	rminals			40	Į0			
Number	Config.		Study Peri	od Descript	tion				
1	D4	One stop	EB Ramps						
2	D4	One stop							
3	0	0	0						
4	0	0	0						
5	0	0	0						

_									
			Out	put Summ	ary				
General Information									
Project description:		29200-BB	(I-95 Wideni		ng Conditio				
Analyst:	JJS		Date:	3/1/2019		Area type:		Urban	
First year of analysis:	2035 2035								
Last year of analysis:									
Crash Data Descript					NI-	I=:4	£ll-4-		
Freeway segments	Segment c			•	No		f crash data		
			ta available	′	No		f crash data		
Ramp segments	Segment c			,	No		f crash data		
D til-			ta available	′	No		f crash data		
Ramp terminals	Segment c		ita available	2	No No		f crash data		
Fatimated Creek Ct		ei crasii da	ita avallable	·	INO	Last year o	f crash data		
Estimated Crash Sta				T-4-1	1/		-	•	200
Crashes for Entire F				Total	K	A	В	С	PDO
Estimated number of crash				205.9	1.1	2.9	15.0	39.2	147.8
Estimated average crash fr				205.9	1.1	2.9	15.0	39.2	147.8
Crashes by Facility		t	Nbr. Sites	Total	K	Α	В	С	PDO
Freeway segments, c			4	205.9	1.1	2.9	15.0	39.2	147.8
Ramp segments, cras			0	0.0	0.0		0.0	0.0	0.0
Crossroad ramp term			0	0.0	0.0		0.0	0.0	0.0
Crashes for Entire F			Year	Total	K	Α	В	С	PDO
Estimated number of		ing	2035	205.9	1.1	2.9	15.0	39.2	147.8
the Study Period, cras	shes:		2036						
			2037						
			2038						
			2039						
			2040						
			2041						
			2042						
			2043						
			2044						
			2045						
			2046						
			2047						
			2048						
			2049						
			2050						
			2051						
			2052						
			2053						
			2054				ļ.,		
			2055				ļ.,		
			2056						
			2057				ļļ		
Di-4-ib4i		F 1771	2058			l .			
Distribution of Crasi	nes for Enti	ire Facility	·	Eatl	ata al Mine-t-	an af Cur -!-	aa Duwle - 1	lha Ctual···	David
Crash Type	Crash	n Type Cat	egory	Total	ted Numb		es During t B	c C	PDO
Multiple vehicle	Hood or a	rachoo:		10tai 0.7	0.0	A 0.0	0.1	0.3	0.3
iviuiupie veriicie	Head-on cr			4.1	0.0		0.1	1.1	2.5
	Right-angle Rear-end of			135.3	0.0	2.0	10.5	27.4	2.5 94.6
	Sideswipe			46.3	0.7		2.5	6.6	36.5
	Other multi		crachoo:	40.3	0.2		0.4	1.1	3.2
				191.4	1.0		14.0	36.6	137.1
Single vehicle	Crashes w		le crashes:	191.4	0.0		0.0	0.0	0.2
onigie verilcie	Crashes w		iect:	10.5	0.0		0.0	1.9	7.7
				10.5	0.1		0.7	0.1	1.5
	Crashes w			0.2	0.0		0.0	0.1	0.2
	Other single			1.9	0.0		0.0	0.0	
	Other singl	gle-vehicle gle-vehicle		1.9 14.5	0.0	0.0	1.0	2.6	1.1 10.7
	TOTAL SITE	Total crasi		205.9	1.1		15.0	39.2	147.8
		ı otai U dSi	100.	200.9	1.1	2.9	10.0	J8.Z	147.0

				Evalua	tion Site S	ummarv		
General In	formation					ullinnary		
Project des			29200-BB	(I-95 Widen	ina) - Exist	ing Conditio	ns	
Analyst:		JJS		Date:	3/1/2019		Area type:	Jrban
First year o	of analysis:		Total lengt		y segment	s for Study F		
Last year o	of analysis:		1					
Site Descr								
Freeway S	egments							
Number	Lanes	Study Period	Study Peri	iod Descript	ion			
	L	Length (mi)						
1	4	0.800		e to 211 Gore				
2	4	0.330	Gore to Gore					
3	4		211 Gore to					
4	4	0.350	Gore to Gore	•				
5	0		0					
6	0		0					
7	0		0					
8	0		0					
9	0		0					
10	0		0					
11	0		0					
12	0		0					
13	0		0					
14 15	0		0					
16	0		0					
17	0		0					
18	0		0					
19	0		0					
20	0	0.000	0					
Ramp Seg			<u> </u>				1	
	Study Peri	od			Number	Study Peri	od	
	Description					Description	n	
	0				21	0		
	0				22	0		
	0				23	0		
	0				24	0		
	0				25	0		
	0				26 27	0		
	0 0				28	0		
	0				29	0		
	0				30	0		
	0				31	0		
	0				32	0		
	0				33	0		
	0				34	0		
15	0				35	0		
16	0				36	0		
17	0				37	0		
18	0				38	0		
	0				39	0		
	0				40	0		
	l Ramp Tei							
Number	Config.	Control	Study Peri	iod Descript	tion			
1	0	0	0					
2	0	0	0					
3	0	0	0					
4	0		0					
5	0	0	0				1	

			Out	put Summ	arv				
General Information			Out	put Summ	aı y				
Project description:		20200 DD	(I-95 Wideni	na) Propo	and				
Analyst:	JJS	29200-DD		3/1/2019	seu	Area type:		Urban	
First year of analysis:		1	Date.	3/1/2019		леа туре.		Ulball	
Last year of analysis:									
Crash Data Descrip									
Freeway segments		Segment crash data available?			No	First year o			
			ita available'	?	No	Last year of			
Ramp segments		rash data a			No	First year of crash data:			
			ita available'	?	No	Last year of			
Ramp terminals		rash data a			No	First year o	f crash data	a:	
		el crash da	ita available'	?	No	Last year of	f crash data	a:	
Estimated Crash Sta	atistics								
Crashes for Entire F	acility			Total	K	Α	В	С	PDO
Estimated number of crash		v Period cras	hes:	129.0	1.1	2.8	14.8	22.9	87
Estimated average crash fi				129.0	1.1	2.8	14.8	22.9	87
Crashes by Facility			Nbr. Sites	Total	К	Α	В	С	PDO
		•	4	129.0	1.1	2.8	14.8	22.9	87
Freeway segments, c Ramp segments, cra			0	0.0	0.0	0.0	0.0	0.0	0
Crossroad ramp term		oc.	0	0.0	0.0		0.0	0.0	0
Crashes for Entire F			Year	Total	K	Α	В	С	PDO
Estimated number of		ring	2035	129.0	1.1	2.8	14.8	22.9	87
the Study Period, cra	shes:		2036						
			2037						
			2038						
			2039						
			2040						
			2041						
			2042						
			2043						
			2044						
			2045						
			2046						
			2047						
			2048						
			2048			l			
			2049			l			
			2050			-			
			2052						
			2053						
			2054						
			2055						
			2056						
			2057						
			2058						
Distribution of Cras	hes for Ent	ire Facility	,						
Crash Type	Crasi	h Type Ca	tegory			er of Crash			
314311 13PE	0.00	урс оа		Total	K	Α	В	С	PDO
Multiple vehicle	Head-on c	rashes:		0.4	0.0	0.0	0.1	0.2	0
	Right-angle	e crashes:		2.5	0.0	0.1	0.4	0.6	1
	Rear-end			79.6	0.7	1.9	10.0	15.4	51
	Sideswipe			26.6	0.2		2.4	3.7	19
		iple-vehicle	crashes:	2.9	0.0	0.1	0.4	0.6	1
		Itiple-vehic		112.0	1.0	2.6	13.3	20.5	74
Single vehicle	Crashes w		ic diastics.	0.3	0.0		0.0	0.0	7-
omigic verille			iect:	12.2	0.0				9
		ith fixed ob				0.2	1.1	1.7	
		ith other of		2.0	0.0		0.1	0.1	1
		ith parked	venicie:	0.2	0.0		0.0	0.0	0
	Other sing	le-vehicle o		2.2	0.0		0.3	0.5	1
	Other sing	le-vehicle of gle-vehicle Total cras	crashes:	2.2 17.0 129.0	0.0 0.1 1.1	0.3	0.3 1.6 14.8	0.5 2.4 22.9	12 87

			Evaluat	ion Site S	ummary			
General In	formation							
Project des	cription:	Project H1	29200-BB (I-95 Wideni	ng) - Propo	sed			
Analyst:		JJS		3/1/2019		Area type:	Urban	
First year o	f analysis:	2035	Total length of freeway		for Study F		2.840	
Last year o		2035	J J	,	,	,		
Site Descri								
Freeway S								
Number	Lanes	Study Period	Study Period Descript	ion				
		Length (mi)	,	-				
1	8	0.800	Carthage Goe to 211 Gore					
2	8	0.330	Gore to Gore					
3	8	1.360	211 Gore to 301 Gore					
4	8	0.350	Gore to Gore					
5	0	0.000	0					
6	0		0					
7	0		0					
8	0		0					
9	0		0					
10	0	0.000	0					
11	0		0					
12	0		0					
13	0		0					
14	0		0					
15	0		0					
16	0	0.000	0					
17	0		0					
18	0		0					
19	0	0.000	0					
20	0	0.000	0					
Ramp Seg	ments		•			•		
	Study Peri	od		Number	Study Peri	od		
	Description	1			Description	ı		
	0			21	0			
	0			22	0			
	0			23	0			
	0			24	0			
	0			25	0			
	0			26	0			
	0			27	0			
	0			28	0			
	0			29	0			
	0			30 31	0			
	0			31 32	0 0			
	0			32	-			
	0			33	0			
	0			-	0			
	0			35 36	0			
	0				0			
	0			37	0			
	0			38	0			
	0			39 40	0			
Crossroad	Damp To	rminale		40	0			
Number	Config.	Control	Study Period Descripti	ion				
1	0	0	0					
2	0	0	0					
3	0	0	0					
4	0	0	0					
5	0	0	0					
6	0	0	o					

		Out	put Summe	aiy				
General Information								
Project description:	Project I-5987 (I-95 V	Videning) - E	xisting Cond	ditions				
Analyst:	JJS	Date:	3/1/2019		Area type:	F	Rural	
First year of analysis:	2035	•						
Last year of analysis:	2035							
Crash Data Descript								
reeway segments	Segment crash data	available?	1	No	First year o	crash data	. 1	
reeway segments	Project-level crash da		2	No	Last year of crash data:			
Jame agamenta	Segment crash data		No		f crash data			
Ramp segments			,	No				
	Project-level crash da					crash data		
Ramp terminals	Segment crash data			No		crash data		
	Project-level crash da	ita available	?	No	Last year of	crash data	:	
Estimated Crash Sta								
Crashes for Entire F	acility		Total	K	Α	В	С	PDO
Estimated number of crashe	es during Study Period, cras	hes:	483.6	3.8	9.6	40.9	78.8	350
Estimated average crash fre	eq. during Study Period, cra	shes/yr:	483.6	3.8	9.6	40.9	78.8	350
Crashes by Facility (Component	Nbr. Sites	Total	K	Α	В	С	PDO
reeway segments, ci		13	483.6	3.8		40.9	78.8	350
Ramp segments, cras		0	0.0	0.0	0.0	0.0	0.0	000
Crossroad ramp termi		0	0.0	0.0		0.0	0.0	0
		Year	Total	K 0.0	A 0.0	В	C 0.0	PDO
Crashes for Entire F								
Estimated number of		2035	483.6	3.8	9.6	40.9	78.8	350
the Study Period, cras	snes:	2036						
		2037						
		2038						
		2039						
		2040						
		2041						
		2042	j		i	1		
		2043						
		2044					- +	
		2045			1			
		2045	+		+	+	-+	
		2047						
		2048						
		2049						
		2050						
		2051						
		2052						
		2053						
		2054						
		2055						
		2056						
		2057				1		
Distribution of Crast	hes for Entire Facility	2057 2058						
	hes for Entire Facility	2057 2058	Estima	ted Numb	er of Crash	es Durina t	he Study F	Period
Distribution of Crasl	hes for Entire Facility Crash Type Ca	2057 2058			er of Crash			
Crash Type	Crash Type Ca	2057 2058	Total	K	Α	В	С	PDO
Crash Type	Crash Type Car Head-on crashes:	2057 2058	Total 3.1	K 0.1	A 0.1	B 0.6	C 1.1	PDO
Crash Type	Crash Type Car Head-on crashes: Right-angle crashes:	2057 2058	Total 3.1 14.5	0.1 0.2	0.1 0.4	0.6 1.8	1.1 3.5	PDO 1
Crash Type	Crash Type Car Head-on crashes: Right-angle crashes: Rear-end crashes:	2057 2058	3.1 14.5 213.2	0.1 0.2 1.9	0.1 0.4 4.9	B 0.6 1.8 20.7	1.1 3.5 40.0	PDO 1 8 145
Crash Type	Crash Type Car Head-on crashes: Right-angle crashes: Rear-end crashes: Sideswipe crashes:	2057 2058 2058 tegory	Total 3.1 14.5 213.2 134.7	0.1 0.2 1.9 0.7	0.1 0.4 4.9 1.8	B 0.6 1.8 20.7 7.8	1.1 3.5 40.0 15.0	PDO 1 8 145 109
Crash Type	Crash Type Cat Head-on crashes: Right-angle crashes: Rear-end crashes: Sideswipe crashes: Other multiple-vehicle	2057 2058 2058 degory	Total 3.1 14.5 213.2 134.7 28.5	0.1 0.2 1.9 0.7	A 0.1 0.4 4.9 1.8 0.5	B 0.6 1.8 20.7 7.8 1.9	1.1 3.5 40.0 15.0 3.7	PDO 1 8 145 109 22
Crash Type Multiple vehicle	Crash Type Car Head-on crashes: Right-angle crashes: Rear-end crashes: Sideswipe crashes:	2057 2058 2058 degory	3.1 14.5 213.2 134.7 28.5 393.9	0.1 0.2 1.9 0.7 0.2 3.1	0.1 0.4 4.9 1.8 0.5 7.7	B 0.6 1.8 20.7 7.8 1.9 32.8	1.1 3.5 40.0 15.0 3.7 63.4	PDO 1 8 145 109 22 286
Crash Type Multiple vehicle	Crash Type Cat Head-on crashes: Right-angle crashes: Rear-end crashes: Sideswipe crashes: Other multiple-vehicle	2057 2058 2058 degory	Total 3.1 14.5 213.2 134.7 28.5	0.1 0.2 1.9 0.7	A 0.1 0.4 4.9 1.8 0.5	B 0.6 1.8 20.7 7.8 1.9	1.1 3.5 40.0 15.0 3.7	PDO 1 8 145 109 22 286
Crash Type Multiple vehicle	Crash Type Cat Head-on crashes: Right-angle crashes: Rear-end crashes: Sideswipe crashes: Other multiple-vehicle Total multiple-vehicle	2057 2058 tegory	3.1 14.5 213.2 134.7 28.5 393.9	0.1 0.2 1.9 0.7 0.2 3.1	0.1 0.4 4.9 1.8 0.5 7.7	B 0.6 1.8 20.7 7.8 1.9 32.8	1.1 3.5 40.0 15.0 3.7 63.4	PDO 1 8 145 109 22 286
Crash Type Multiple vehicle	Crash Type Cal Head-on crashes: Right-angle crashes: Rear-end crashes: Sideswipe crashes: Other multiple-vehice Total multiple-vehic Crashes with animal: Crashes with fixed ob	2057 2058 degory e crashes: le crashes: le crashes:	3.1 14.5 213.2 134.7 28.5 393.9 4.3	0.1 0.2 1.9 0.7 0.2 3.1 0.0	0.1 0.4 4.9 1.8 0.5 7.7 0.0	B 0.6 1.8 20.7 7.8 1.9 32.8 0.1	1.1 3.5 40.0 15.0 3.7 63.4 0.1	PDO 1 8 145 109 22 286 2
Crash Type Multiple vehicle	Crash Type Cat Head-on crashes: Right-angle crashes: Rear-end crashes: Sideswipe crashes: Other multiple-vehice Total multiple-vehic Crashes with animal: Crashes with fixed ob Crashes with other ot	2057 2058 regory e crashes: le crashes: le crashes: leject:	Total 3.1 14.5 213.2 134.7 28.5 393.9 4.3 54.5 8.9	0.1 0.2 1.9 0.7 0.2 3.1 0.0 0.4	0.1 0.4 4.9 1.8 0.5 7.7 0.0 1.1	B 0.6 1.8 20.7 7.8 1.9 32.8 0.1 4.6 0.3	1.1 3.5 40.0 15.0 3.7 63.4 0.1 8.7	PDO 1 8 145 109 22 286 4 39
Crash Type Multiple vehicle	Crash Type Car Head-on crashes: Right-angle crashes: Rear-end crashes: Gideswipe crashes: Other multiple-vehic Total multiple-vehic Crashes with animal: Crashes with other ot Crashes with praked	2057 2058 2058 2058 2058 2058 2058 2058 2058	Total 3.1 14.5 213.2 134.7 28.5 393.9 4.3 54.5 8.9 2.0	0.1 0.2 1.9 0.7 0.2 3.1 0.0 0.4 0.0	A 0.1 0.4 4.9 1.8 0.5 7.7 0.0 1.1 0.1	B 0.6 1.8 20.7 7.8 1.9 32.8 0.1 4.6 0.3 0.2	1.1 3.5 40.0 15.0 3.7 63.4 0.1 8.7 0.5	PDO 1 8 145 109 22 286 4 39 8 1
Crash Type Multiple vehicle	Crash Type Cat Head-on crashes: Right-angle crashes: Rear-end crashes: Sideswipe crashes: Other multiple-vehicle Total multiple-vehicle Crashes with animal: Crashes with other ot Crashes with other ot Crashes with parked Other single-vehicle	2057 2058 regory e crashes: le crashes: le crashes: leject: oject: vehicle: crashes	Total 3.1 14.5 213.2 134.7 28.5 393.9 4.3 54.5 8.9 2.0	0.1 0.2 1.9 0.7 0.2 3.1 0.0 0.4 0.0 0.0	A 0.1 0.4 4.9 1.8 0.5 7.7 0.0 1.1 0.1 0.0	B 0.6 1.8 20.7 7.8 1.9 32.8 0.1 4.6 0.3 0.2 3.0	C 1.1 3.5 40.0 15.0 3.7 63.4 0.1 0.5 0.5 0.4	PDO 1 8 145 109 22 286 4 39 8 1 100
	Crash Type Car Head-on crashes: Right-angle crashes: Rear-end crashes: Gideswipe crashes: Other multiple-vehic Total multiple-vehic Crashes with animal: Crashes with other ot Crashes with praked	2057 2058 degory e crashes: le crashes: le crashes: lect: le	Total 3.1 14.5 213.2 134.7 28.5 393.9 4.3 54.5 8.9 2.0	0.1 0.2 1.9 0.7 0.2 3.1 0.0 0.4 0.0	A 0.1 0.4 4.9 1.8 0.5 7.7 0.0 1.1 0.1	B 0.6 1.8 20.7 7.8 1.9 32.8 0.1 4.6 0.3 0.2	1.1 3.5 40.0 15.0 3.7 63.4 0.1 8.7 0.5	

Output Summary

			Eve	lustion City	·			
General In	formation		EVa	luation Site	Summary			
Project des		Drojoet I E	987 (I-95 Widening) Evicting Co	nditions			
Analyst:	сприоп.	JJS	Date:	3/1/2019	mullions	Area type:	Rural	
First year o	of analysis:	2035	Total length of free		te for Study I	Period (mi):		
Last year o		2035	Total length of he	eway segmen	is for Study i	erioù (iiii).	17.550	
Site Descr		2000						
Freeway S								
Number	Lanes	Study Period	Study Period Des	crintion		I		
INGILIDO	Lancs	Length (mi)	Olddy i Cilod Desi	cription				
1	4	1.600	S limits to end curve					
2	4	1.470	End Curve to 301 SB (Gore				
3	4	0.130	301 SB Gore to Gore					
4	4	0.230	301 SB Gore to 301 N	B Gore				
5	4	0.140	301 NB Gore to Gore					
6	4	4.910	301 NB gore to End Cr	rv				
7	4	0.980	End Crv to NC 20 Gore					
8	4	0.450	Gore to Gore					
9	4	1.230	NC 20 Gore to End of	Crv				
10	4		NC20 Gore to Gore					
11	4	0.480	NC 20 Gore to End Cu	irve				
12	4	1.090	End Curve to End Curv	ve				
13	4	4.320	End Curve to End Curv	ve				
14	0	0.000	0					
15	0		0					
16	0	0.000	0					
17	0		0					
18	0	0.000	0					
19	0	0.000	0					
20 Dama Can	0	0.000	0					
Ramp Seg Number	Study Peri	a d	ı	Number	Study Peri	ad		
Nullibel	Description			Nullibei	Description			
1	0			21	0	"		
	0			22	0			
	0			23	0			
	0			24	0			
5	0			25	0			
6	0			26	0			
	0			27	0			
	0			28	0			
	0			29	0			
	0			30	0			
	0			31	0			
	0			32	0			
	0			33 34	0			
	0			35				
	0			35	0			
-	0			37	0			
	0			38	0			
	0			39	0			
	0			40	0			
	Ramp Tei	rminals		•	•			
Number	Config.	Control	Study Period Des	cription				
1	0	0	0					
2	0	0	0					
3	0	0	0					
4	0	0	0					
5	0	0	0					

			Out	put Summ	ary				
General Information	1								
Project description:	Project I-5	987 (I-95 W	/idening) - P	roposed (W	/iden to 8 la	anes)			
Analyst:	JJS			3/1/2019		Area type:		Rural	
First year of analysis									
Last year of analysis		i							
Crash Data Descrip									
Freeway segments		rach data s	vailable?	1	No	Firet year o	f crach data		
rieeway segments		Segment crash data available?			No	First year of crash data:			
		Project-level crash data available			No	Last year of crash data:			
Ramp segments		Segment crash data available?				First year of crash data:			
	Project-level crash data available			′	No	Last year of crash data:			
Ramp terminals	Segment crash data available? Project-level crash data available				No No	First year of crash data:			
		el crash da	ta available'	available?		Last year of crash data:			
Estimated Crash St									
Crashes for Entire I	Facility			Total	K	Α	В	С	PDO
Estimated number of crast	hes during Stud	y Period, cras	hes:	343.4	4.0	9.6	41.2	52.9	235.8
Estimated average crash t	req. during Stu	dy Period, cras	shes/yr:	343.4	4.0	9.6	41.2	52.9	235.8
Crashes by Facility	Componen	t	Nbr. Sites	Total	K	Α	В	С	PDO
Freeway segments,			13	343.4	4.0	9.6	41.2	52.9	235.8
Ramp segments, cra			0	0.0	0.0	0.0	0.0	0.0	0.0
Crossroad ramp terminals, crashes:			0	0.0	0.0	0.0	0.0	0.0	0.0
Crashes for Entire			Year	Total	K 0.0	Α	В.	C 0.0	PDO
			2035	343.4	4.0	9.6	41.2	52.9	235.8
Estimated number of crashes during				343.4	4.0	9.0	41.2	52.9	235.0
the Study Period, cra	ISHES:		2036						
			2037						
			2038						
			2039						
			2040						
			2041						
			2042						
			2043						
			2044						
			2045						
			2046						
			2047						
			2048						
			2049						
			2050						
			2051						
			2052						
			2052						
			2053						
			2055						
			2056						
			2057						
			2058						
Distribution of Cras	thes for Ent	ire Facility							
Crash Type	Crae	h Tyne Cat	onorv			er of Crash			
Crasii Type	Crash Type Category		ogory	Total	K	Α	В	С	PDO
Multiple vehicle	Head-on c	rashes:		2.0	0.1	0.1	0.5	0.7	0.6
	Right-angl	e crashes:		9.0	0.2	0.4	1.6	2.1	4.8
	Rear-end crashes:			130.1	1.8	4.3	18.6	23.9	81.6
	Sideswipe crashes:			79.4	0.7	1.6	6.9	9.0	61.3
		Other multiple-vehicle crashes:			0.2	0.4	1.7	2.2	12.4
		ible-venicle	Total multiple-vehicle crashes:		2.8	6.8	29.4	37.9	160.0
	Other mult			237 6		0.0	25.4	31.9	
Single vehicle	Other mult	Itiple-vehic		237.6		0.0	0.4	0.4	
Single vehicle	Other mult Total mu Crashes w	Itiple-vehicl ith animal:	e crashes:	5.2	0.0	0.0	0.1	0.1	
Single vehicle	Other mult Total mu Crashes w Crashes w	Itiple-vehicl ith animal: ith fixed ob	e crashes: ject:	5.2 64.3	0.0 0.6	1.6	6.7	8.5	46.9
Single vehicle	Other mult Total mu Crashes w Crashes w Crashes w	Itiple-vehicl ith animal: ith fixed ob ith other ob	ject:	5.2 64.3 10.4	0.0 0.6 0.0	1.6 0.1	6.7 0.4	8.5 0.5	46.9 9.5
Single vehicle	Other multi Total mu Crashes w Crashes w Crashes w Crashes w	Itiple-vehich ith animal: ith fixed ob ith other ob ith parked	ject: ject: vehicle:	5.2 64.3 10.4 2.4	0.0 0.6 0.0 0.0	1.6 0.1 0.1	6.7 0.4 0.3	8.5 0.5 0.4	46.9 9.5 1.7
Single vehicle	Other multi Total mu Crashes w Crashes w Crashes w Crashes w Other sing	Itiple-vehicl ith animal: ith fixed ob ith other ob ith parked le-vehicle o	ject: vehicle: rashes	5.2 64.3 10.4 2.4 23.5	0.0 0.6 0.0 0.0	1.6 0.1 0.1 1.0	6.7 0.4 0.3 4.3	8.5 0.5 0.4 5.5	46.9 9.5 1.7 12.1
Single vehicle	Other multi Total mu Crashes w Crashes w Crashes w Crashes w Other sing	Itiple-vehich ith animal: ith fixed ob ith other ob ith parked	ject: jject: jject: vehicle: rashes crashes:	5.2 64.3 10.4 2.4	0.0 0.6 0.0 0.0	1.6 0.1 0.1	6.7 0.4 0.3	8.5 0.5 0.4	4.9 46.9 9.5 1.7 12.1 75.1 235.8

	formation									
Project des		Project I-5	987 (I-95 Widening) - F	roposed (V	Viden to 8 I	anes)				
Analyst:		JJŚ		3/1/2019		Area type:	Rural			
First year of analysis: 2035			Total length of freewa	y segments	for Study I	Period (mi):	17.390			
	f analysis:	2035	-							
Site Desci	ription									
Freeway S	egments									
Number	Lanes	Study Period	Study Period Descript	ion		1				
		Length (mi)								
1	8	1.600	S limits to end curve			Ĭ				
2	8	1.470	End Curve to 301 SB Gore							
3	8	0.130	301 SB Gore to Gore							
4	8	0.230	301 SB Gore to 301 NB Go	re						
5	8	0.140	301 NB Gore to Gore							
6	8	4.910	301 NB gore to End Crv							
7	8	0.980	End Crv to NC 20 Gore							
8	8	0.450	Gore to Gore							
9	8	1.230	NC 20 Gore to End of Crv							
10	8		NC20 Gore to Gore							
11	8		NC 20 Gore to End Curve							
12	8		End Curve to End Curve			1				
13	8	4.320	End Curve to End Curve			1				
14	0	0.000	0							
15	0		0							
16	0		0							
17	0		0							
18	0		0							
19	0		0							
20	0	0.000	0							
Ramp Seg										
Number	Study Peri			Number	Study Per					
	Description	1		04	Descriptio	n				
1	0			21 22	0					
2	0			22	0 0					
4	0			23	0					
5	0			25	0					
6	0			26	0					
7	0			27	0					
8	0			28	0					
9	0			29	0					
10	0			30	0					
11	0			31	0					
12	0			32	0					
13	0			33	0					
14	0			34	0					
15	0			35	0					
16	0			36	0					
17	0			37	0					
18	0			38	0					
19	0			39	0					
20	0			40	0					
Crossroad	Ramp Te	rminals								
Number	Config.	Control	Study Period Descript	ion						
1	0	0	0							
2	0	0	0			1				
3	0	0	0			1				
4	0	0	0							
5 6	0		0							
	0	0	0							